

SHARP SERVICE MANUAL

PDSM58000180K



Personal Computer **MZ-80K**

FEATURES

- The MZ-80K is a full-fledged personal microcomputer equipped with 8-bit microprocessor (Z-80) and it can meet a variety of applications like hobbies, educations, office works, controls (of apparatus in every industrial field), etc.
- It is a compact desk-top type, itself a simplified unit including CPU board, CRT display, cassette tape recorder and keyboard all together.
- Speaker (3 octaves) and clock function are built in.
- Applicable Languages (BASIC, MACHINE LANGUAGE, ASSEMBLER etc.) are changed easily with variations of tape mode: a free selection of them is possible according to the purposes of users.
- Memory extension is allowed up to 48K bytes in the board.

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Caution in Service

- * Maintain the safety and protecting ability of the apparatus after service.
- * High voltage shall not be rised to excess voltage so as to prevent this apparatus from the extra X-ray radiation.

SPECIFICATIONS

■ General

CPU	Z-80	Clock Function:	Built in
Memory	Monitor ROM; 4K bytes RAM; 20K bytes (dynamic RAM) Memory extension; 48K bytes (max.)	Editor function	Cursor control; "up", "down", "right", "left", "home", "clear home" Edit key, Delete key
Display	10" CRT (black/white), 8 x 8 dot matrix, Characters; 1000 (40 characters x 25 lines)	Power supply	AC 220V ±10%, 50 Hz AC 240V ±10%, 50 Hz (for UK)
Cassette	Standard audio cassette tape Data transfer speed; 1200 bits/sec. Data transfer system; SHARP PWM	Power consumption	Approx. 45W
Sound output	400mW (max.)	Temperature	Operating temp.; 0°C to 35°C Storage temp.; -15°C to 60°C
Keys layout	Number; 78 keys ASCII standard (alphabet capital letter, figures), Small letter, Graphic	Humidity	Lower than 80° during operation
		Weight	Approx. 13 kg
		Dimensions	410(W) x 270(H) x 470(D)mm
		Music function	Built in

■ CPU Board Section (DCPU-0006PAZZ)

CPU	Z-80; 1 pc.	Programmable counter	1 pc.
ROM	Monitor; 1 pcs. (4K bytes) Character generator; 1 pcs. (2K bytes)		
RAM	Standard; 16K dynamic RAM; 8 pcs. (16K bytes) 4K dynamic RAM; 8 pcs. (4K bytes) Video RAM; 2 pcs. (1K bytes)	Programmable peripheral interface	1 pc.
		Other ICs	53 pcs.

■ Power Supply Section (DBOXD0004PAZZ), (DBOX0005PAZZ ---- for UK)

Input	AC 220V ±10%, 50Hz AC 240V ±10%, 50Hz (for UK)
Output	DC 12V, 1.6A max. DC 5V, 1.6A max. DC -5V, 0.2A max.

■ Display Section (DUTT0004PAZZ)

I. General specifications		II. Electrical specifications	
Size	10"	Video output	40Vp-p standard (35Vp-p limit)
Frequency	60Hz (vertical), 15.75kHz (horizontal) 15.75kHz (horizontal)	Resolution	Horizontal  These patterns must be clear-cut.
Power source	DC 12V, 1.1A ±10%	Non-linearity distortion	Horizontal; ±8% (±14% max.) Vertical; ±8% (±12% max.)
Picture tube	Quick start type (3 sec.) 240NB4; 10" 90° deflection explosion proof type Heater; 12V, 75mA	Geometrical distortion	Pincushion dist.; 1% (2% max.) Barrel dist.; 1% (2% max.) Trapezoidal dist.; 1% (2% max.) Parallelogram dist.; 1° (2.5° max.)
IC	2 pcs.	High voltage	Zero beam; 11.0kV (10.0kV, min., 12.0kV, max.)
Transistor	5 pcs.	Power supply	DC12.0V, 1.05A (1.2A max.)
Diodes	9 pcs.	Working range	12V ±10%
Sound output	400mW max. (400 Hz) Speaker 8cm, round dynamic type (32Ω)	Scan size	Horizontal; 10% (15% max.) Vertical; 10% (15% max.)
Control knobs	Volume, V-Hold, Contrast, H-Hold, Brightness, Focus	Horizontal lock-in range	±300 Hz (±100Hz)
Working temperature	-10°C to 50°C	Vertical lock-in range	-12 Hz (-6 Hz limit)
		Audio frequency characteristic	400 Hz (0dB) -10dB ±4dB at 100 Hz -12dB ±4dB at 10kHz
		Sound maximum output	400mW at 400 Hz (350mW min.)

■ Cassette tape recorder Section (KTRC-0004PAZZ)

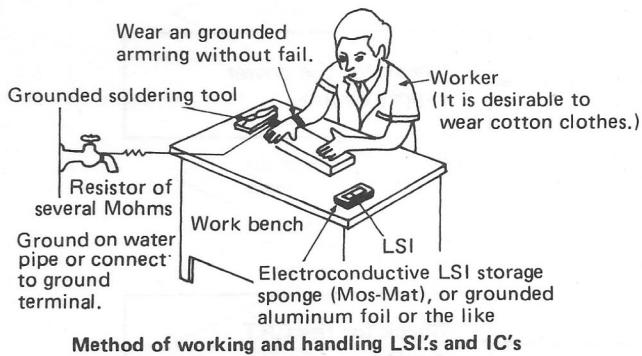
System	PWM recording	Biasing	DC system
Power source	5V ±0.25V (rated)	Erasing	DC system
Rated amperage	Wait; 2mA Record; 70mA (TEAC test tape) Playback; 7mA (TEAC test tape)	Playback sensitivity	1m sec. to 500μ sec. (standard)
Semiconductors	4 transistors 1 IC 4 diodes	Input level	Below 0.4V ("L") Over 2.0V ("H")
Applied tape	From C30 to C120	Input impedance	Over 10kΩ (record jack)
Tape speed	4.75 cm/sec.	Output level	Below 0.4V ("L") Over 2.0V ("H")
Track	2-track monaural type	Working temperature	-10°C to 50°C
Motor	Electronic governor motor (12V)	Storage temperature	-25°C to 70°C

* Specifications subject to change without prior notice.

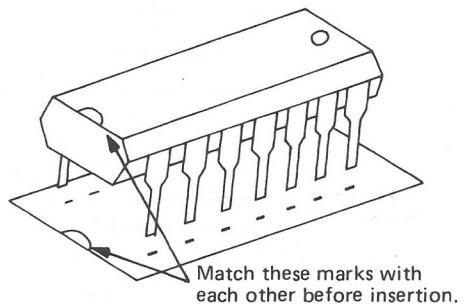
Precautions on Handing LSI's and IC's

LSI's and IC's used in the MZ-80K are semiconductor integrated circuits whose basic element is MOS FET. The IC's, so poor in static electricity or leakage current from soldering tool, are liable to suffer breakdown. It is essential therefore to read the following instructions carefully and handle them properly.

- ① Ground your body before handling LSI's or IC's. Grounding must be made through a resistor of several Mohms for avoiding danger. Note that if possible, you wear cotton gloves and working clothes, but not chemical fiber ones easily charged with static electricity.



- ⑤ When inserting LSI's or IC's, don't mistake their inserting direction unconditionally. Reverse insertion damages them.



- ⑥ When storing and transporting an LSI or IC separately, wrap it with aluminum foil or insert into electroconductive sponge (Mos-Mat) to maintain terminals at the same potential.

- ② When putting LSI's on a work bench during repair, lay grounded aluminum foil or the like superior in electric conductivity under them.

- ③ Use a grounded soldering tool free from leakage current. Even if current leaks out to the tip of soldering tool, gate insulation layer is protected by the action of protective diode. However, too much leakage current, which is caused by the tip in direct contact with power supply, for instance, may break the protective diode itself. Therefore, never fail to use a soldering tool free from leakage current.

A low-voltage soldering tool (6V, 12W) is optimal.

- ⑦ Storage temperature of LSI is -20 to +70°C, and that of IC -40 to +125°C. It is recommended, however, to store them at a temperature near room temperature if possible. Avoid storing them on a place extremely high or low in humidity.

- ⑧ Be careful to refrain from giving an unreasonable mechanical impact to LSI's or IC's, or from giving an unreasonable force to lead wires.

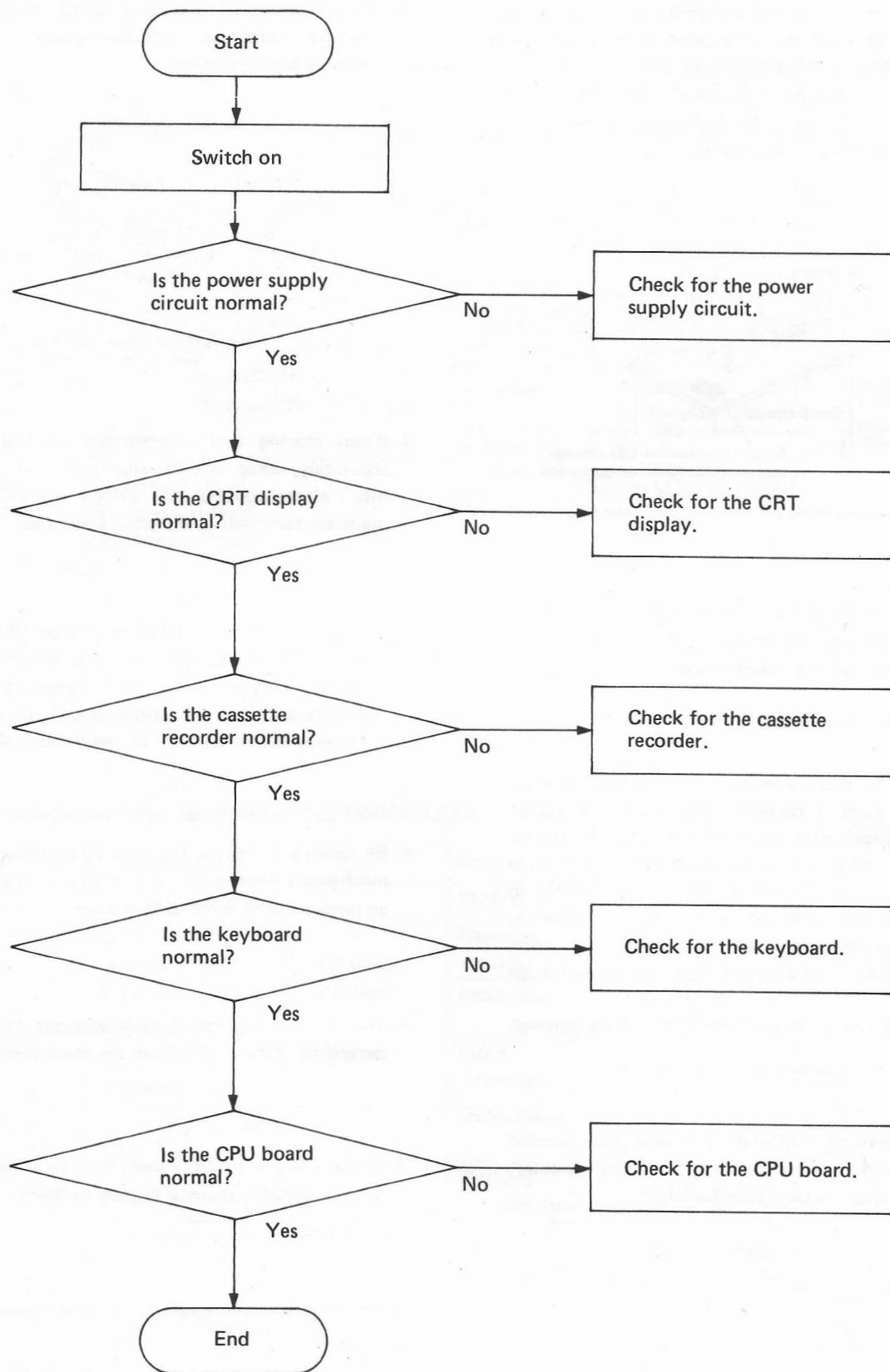
- ⑨ Turn off the power switch without fail before detaching LSI's or IC's from the main body.

- ⑩ Solder LSI's or IC's in a short time so as to prevent an unseasonable thermal impact to them.

- ④ When inserting LSI's or IC's into the printed wiring board, avoid touching their pins directly, but hold their black plastic packages.

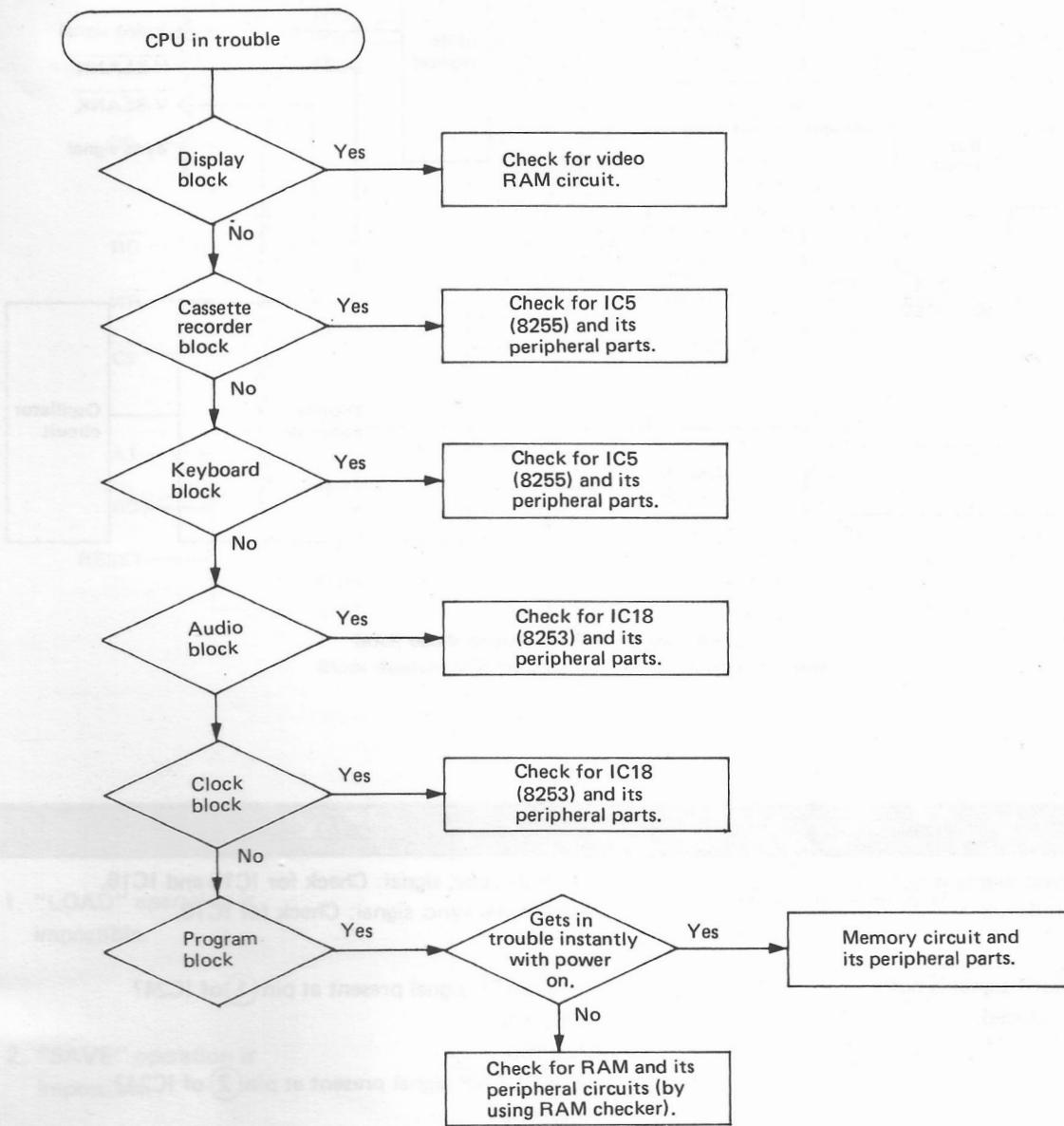
TROUBLE SHOOTING GUIDE

The machine comprises five main units, CPU board, display, cassette tape recorder, keyboard, and power supply circuits. For a quick solution to most operating difficulties, first consult the chart below to find which section of the machine is subjected to the trouble, and next to do the checkings according to more detailed instructions given in the succeeding pages.



CPU BOARD SECTION

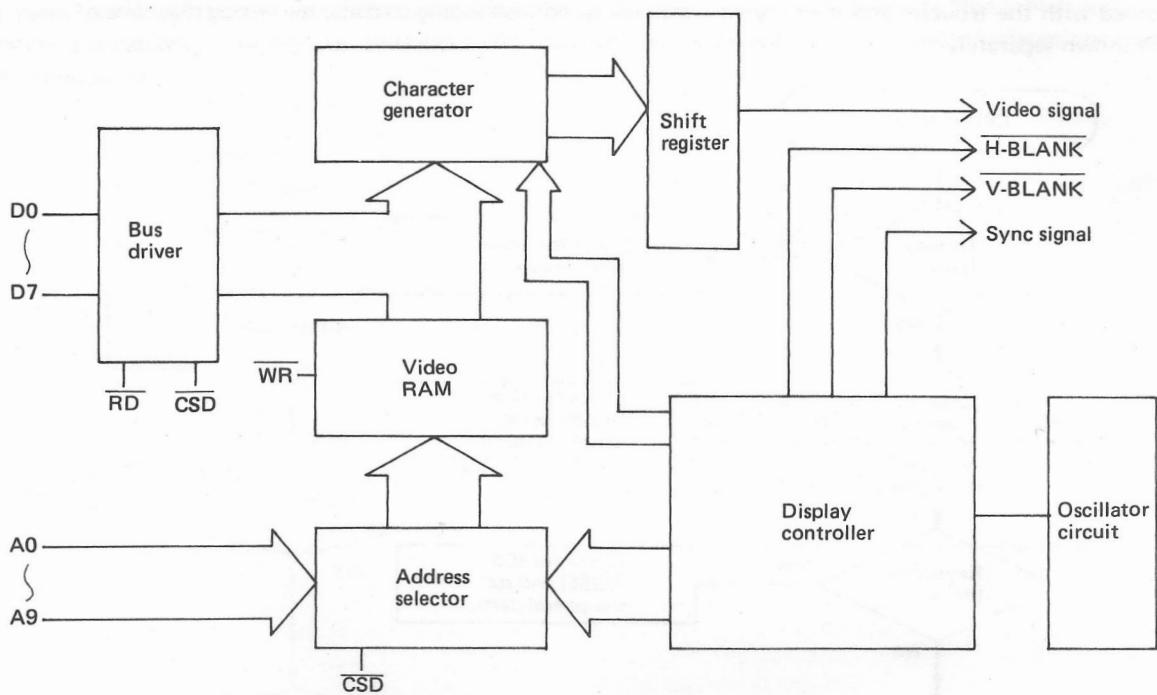
The CPU board is composed of the following six blocks. When it gets in trouble, first locate which block is concerned with the trouble, and next try to check for its corresponding circuits; the wiring diagrams of every block will be shown separately.



■ Checking methods of each circuit

1. By touching IC insulating parts by fingers:
 - If they seem too hot by heat generation;
IC is defective, IC load is heavy or components are touching each other — ROM and V-RAM are exempted from this checking, however.
 - If a circuitry state is changed to another; Soldering is poor, socket contact is improper, or printed-wiring is erroneous.
2. By using a synchroscope:
 - If the relation between input and output of TTL IC is illogical, this means defective IC gate.
 - Check if the voltage level of TTL IC is as specified: High level; over 2.4V, Low level; below 0.5V.

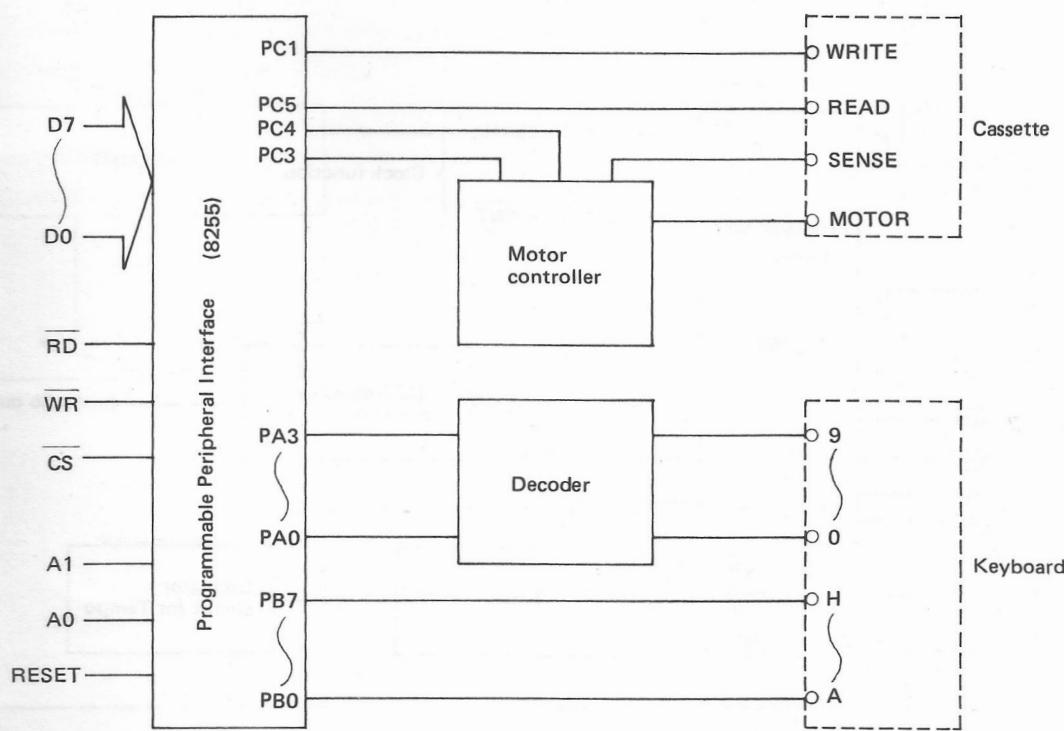
■ Display Block



Block Diagram of Parts around Video RAM

Problem	Check Point
1. Sync. signal is not produced.	Vertical sync. signal: Check for IC15 and IC16. Horizontal sync. signal: Check for IC10.
2. Video signal is not produced.	Is <u>V-GATE</u> signal present at pin <u>(1)</u> of IC24? Yes; IC24 No; IC5 Is <u>V-BLANK</u> signal present at pin <u>(2)</u> of IC24? Yes; IC24 No; IC20 Is <u>H-BLANK</u> signal present at pin <u>(13)</u> of IC17? Yes; IC17, IC3 No; IC15 Is output signal present at pin <u>(2)</u> of IC17? Yes; IC17, IC3 No; IC29
3. Displayed character(s) is partly invisible.	Check for IC29 and CG.
4. The display is positionally deviated.	Check for sync. signal circuit.

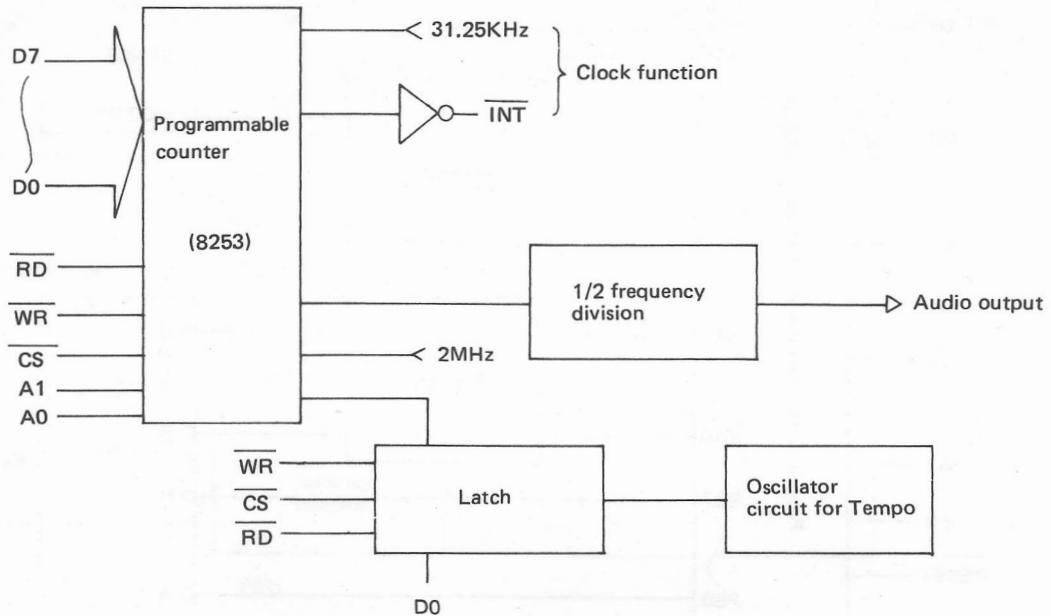
■ Cassette recorder/Keyboard Block



Block diagram of Parts around Cassette recorder/Keyboard.

Problem	Check Point
1. "LOAD" operation is impossible.	Is output signal present at pin (4) of IC4? Yes; IC5 No; IC4
2. "SAVE" operation is impossible.	Is output signal present at pin (15) of IC5? Yes; IC4 No; IC5
3. Motor doesn't rotate.	Is voltage at pin (6) of IC2 at "low" level? Yes; IC3, Q1, Q2 No; IC2, IC24, IC4, IC5
4. Motor doesn't stop.	Is voltage at pin (6) of IC2 at "high" level? Yes; IC3, Q1, Q2 No; IC2, IC24, IC4, IC5
5. Key input is ineffective.	Check for IC5 and IC6.

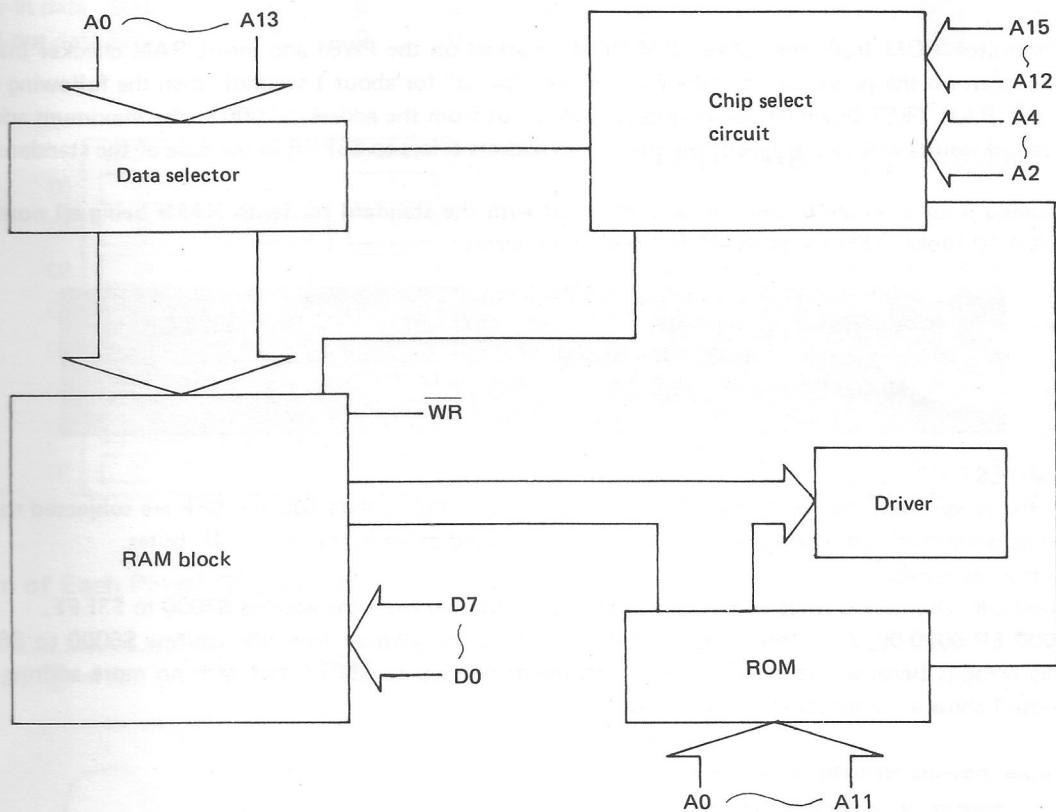
■ Audio/Clock Block



Block Diagram of Parts around Audio/Clock Block

Problem	Check
1. No sound is produced.	Is output signal present at pin 10 of IC18? Yes; IC12, IC3 No; IC18
2. Sound is distorted.	Check for IC12 and IC18.
3. Tempo is abnormal.	Check for IC13.
4. Clock function is abnormal.	Check for IC18.

■ Memory Circuit Block



Block Diagram of Parts around Memory Circuit

Problem	Check Point
1. Reproduced pictur shows "panic".	Check for the following: ROM, IC46, CG, IC43 Address bus line; A0 to A15 (IC44, IC45) Data bus line; D0 to D7 (IC36, IC37, IC50) Control line; IC35 RAM (by using RAM checker*), IC52, IC53, IC56
2. Error display or misoperation is caused as a result of program execution.	RAM
3. Cursol disappears.	IC46, IC1
4. Returns to "MONITOR SP-1002."	RAM
5. Error is caused after a long operation.	RAM

* How to Use RAM Checker

Remove monitor ROM from the socket ("M-ROM" marked on the PWB) and insert RAM checker into the socket and turn on the power switch (the picture gets "panic" for about 1 second): then the following RAM TEST-1 and RAM TEST-2 will be automatically carried out from the address \$1000 to the maximum address and the tested results will be displayed: the maximum address refers to \$5FFF in the case of the standard set.

The following is an example of the testing performed with the standard set (with RAMs being all normal). Note: RAM (I) block, 16K bytes; RAM (II) block, 4K bytes

RAM TEST-1	1000-OK	2000-OK	3000-OK	4000-OK	5000-OK
	6000-ER-6000-00, 7F,				
RAM TEST-2	00	FF	00	FF	F0 OK

1) RAM TEST-1

In the range from the address \$1000 to the maximum address, data \$00 and \$FF are subjected to automatic write/read test; if error is caused, "ER" mark is indicated in the unit of 4K bytes.

In the above table,

3000-OK: this means write/read operation has been normal from the address \$3000 to \$3FFF.

6000-ER-6000-00, 7F: this means there exists error somewhere from the address \$6000 to \$6FFF; this error is because the standard set is provided with up to \$5FFF but with no more address, so it doesn't show a malfunction of RAM itself.

An example showing an error really caused:

2000-ER-235B-00, 01

An error is caused in the addresses \$2000s; namely, although data \$00 has been written in the address \$235B, its read-out data is \$01.

2) RAM TEST-2

Write/read test is carried out with the following data.

- Write-in data \$00 (from the address \$1000 to the maximum address)
- Write-in data \$FF (from the address \$1000 to the maximum address)
- Write-in data \$00 (from the maximum address to the address \$1000)
- Write-in data \$FF (from the maximum address to the address \$1000)
- Write-in data \$F0 and \$0F to be entered alternately (from the address \$1000 to the maximum address and vice versa).

The above table (RAM TEST-2) shows all the items (a) thru (e) are normal — the indications "00", "FF", "00", "FF" and "F0" correspond to (a) thru (e) respectively.

An example showing an error really caused:

RAM TEST-2	00	FF	00	ER-23FF-01
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From the above, it can be seen that the tests (a) and (b) are both normal and that although data \$00 in the test (c) has been written in the address \$23FF, its read-out data is \$01, which means that an error has been caused.

In this way, which RAM block (I, II or III) has been subjected to the error is first located, and then so does which RAM component having undergone the error, by the respective information given by the RAM tester. In the above example, the display of "\$23FF" means RAM (I) block is in trouble, and the display of read-out data "\$01" (with respect to write-in data "\$00") shows RAM 1 of the block (I) is defective.

	D7	D6	D5	D4	D3	D2	D1	D0
Write-in data \$00	0	0	0	0	0	0	0	0
Read-out data \$01	0	0	0	0	0	0	0	1

← Error to occur

	RAM(III)	RAM(II)	RAM(I)
D0	17	9	1
D1	18	10	2
D2	19	11	3
D3	20	12	4
D4	21	13	5
D5	22	14	6
D6	23	15	7
D7	24	16	8

RAM (I)

\$1000 ~ \$4FFF (with 16KRAM)

RAM (II)

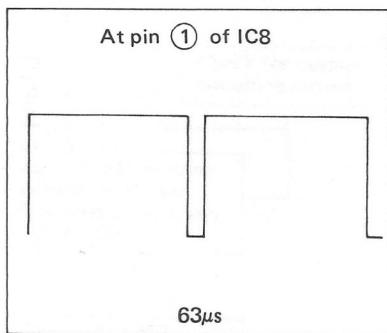
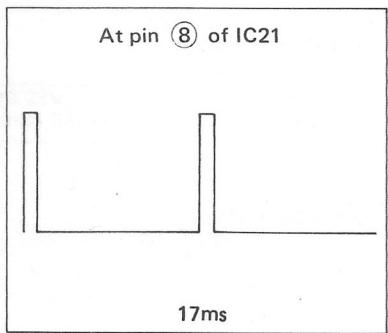
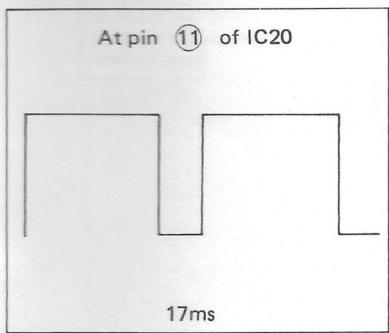
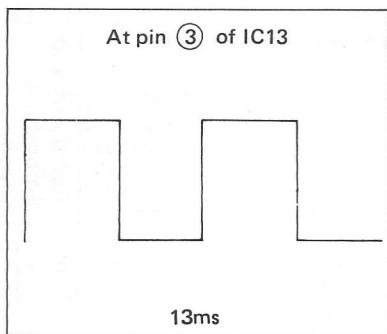
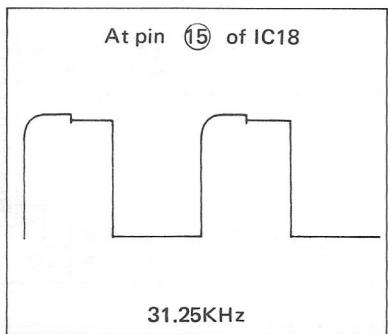
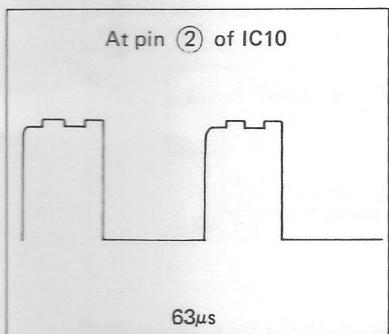
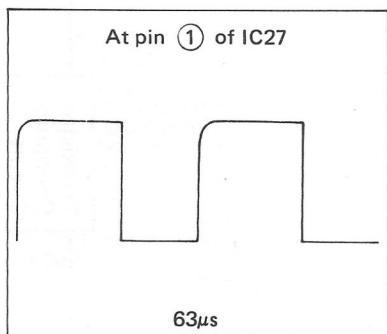
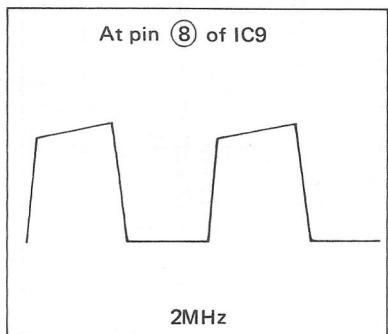
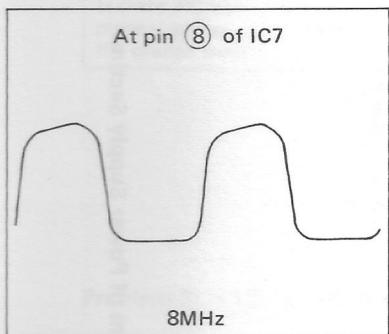
\$5000 ~ \$8FFF (with 16KRAM)

\$5000 ~ \$5FFF (with 4KRAM)

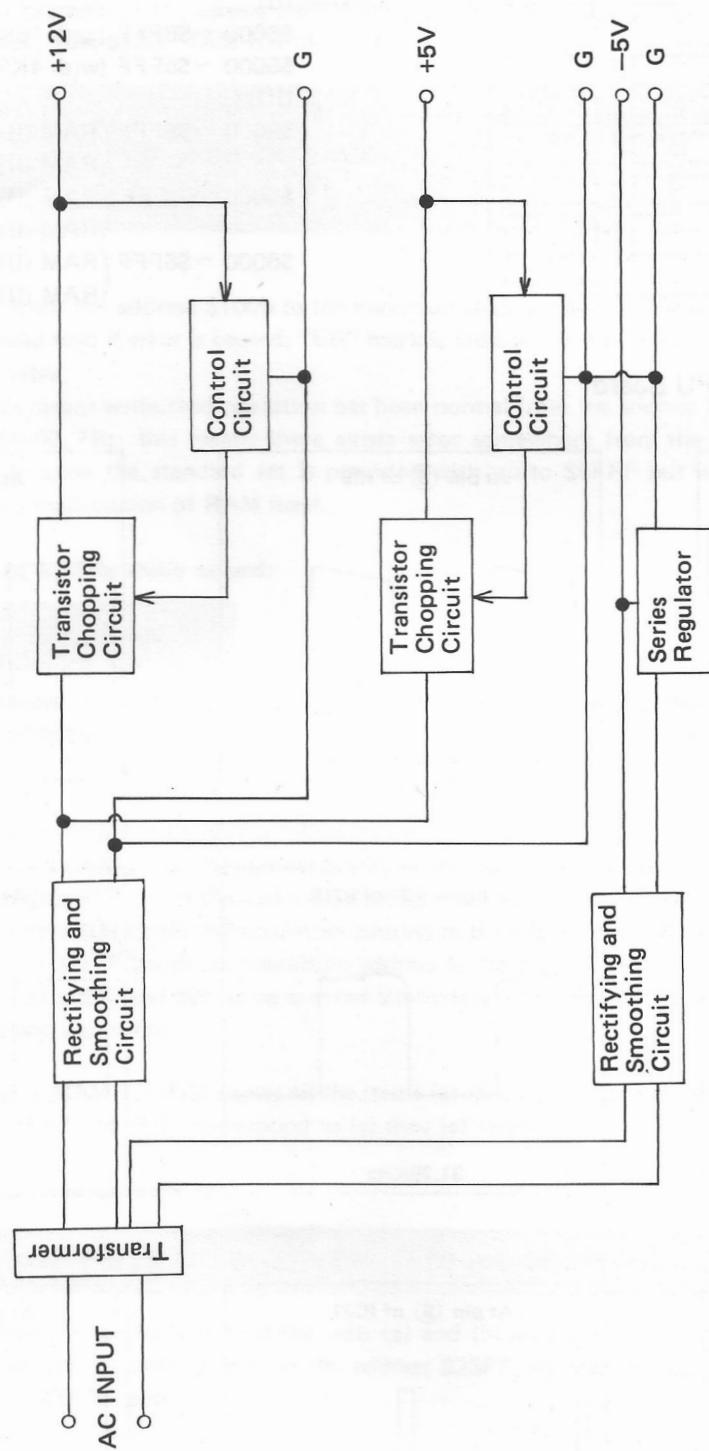
RAM (III)

\$9000 ~ \$9FFF (RAM (II) 16KRAM)
(RAM (III) 4KRAM)\$9000 ~ \$CFFF (RAM (II) 16KRAM)
(RAM (III) 16KRAM)\$6000 ~ \$6FFF (RAM (II) 4KRAM)
(RAM (III) 4KRAM)

■ Waveform of Each Pin of CPU Board



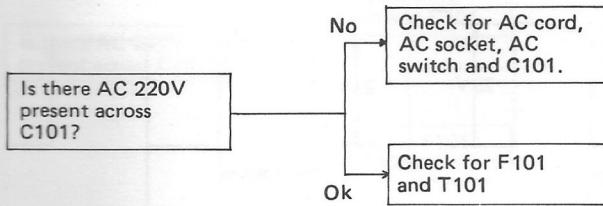
POWER SUPPLY SECTION



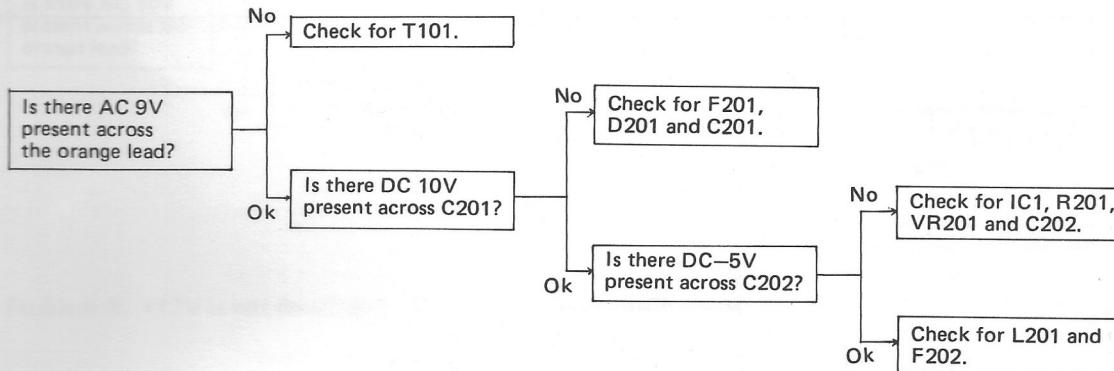
Block Diagram of Power Supply Section

■ Trouble Shooting Chart (DBOXD0004PAZZ)

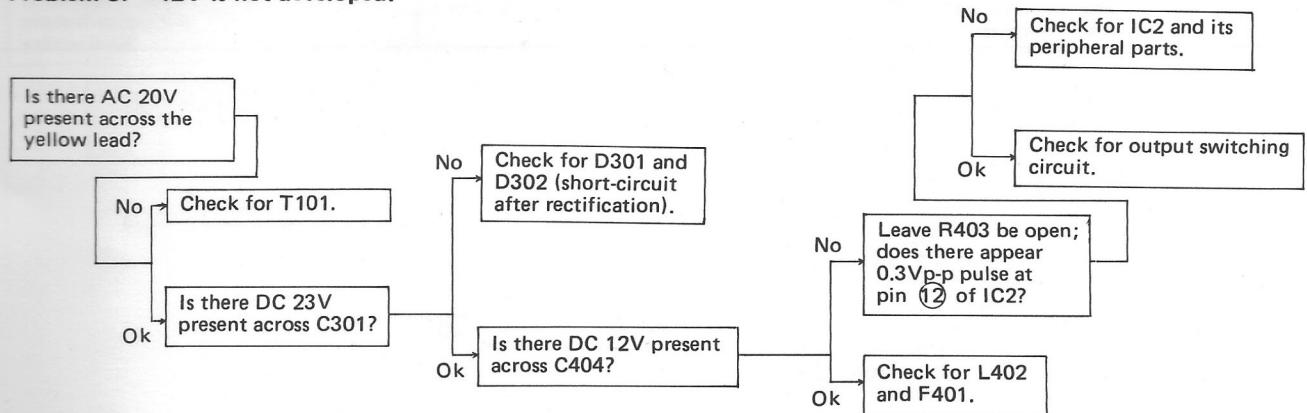
Problem 1: No voltage appears at any output terminal.



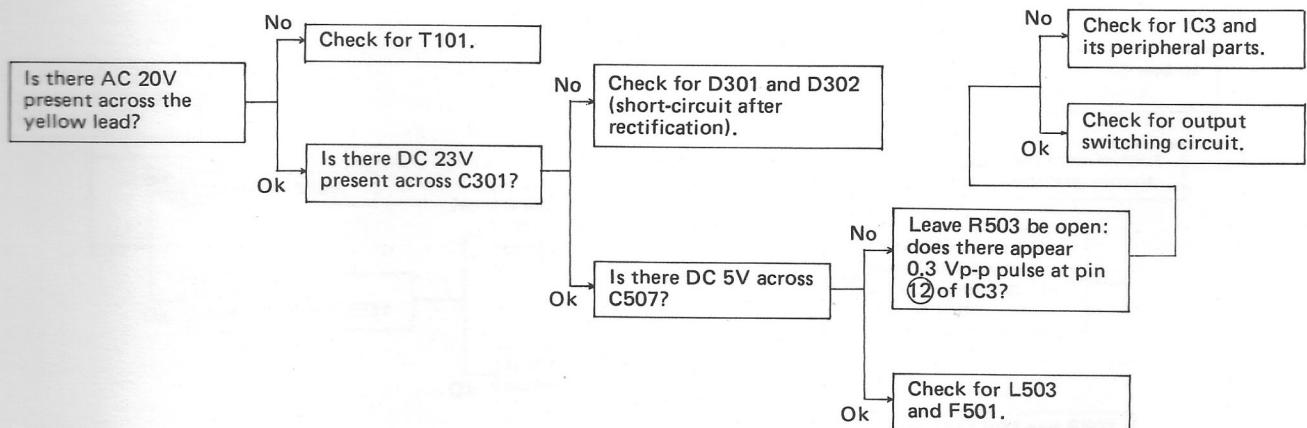
Problem 2: -5V is not developed.



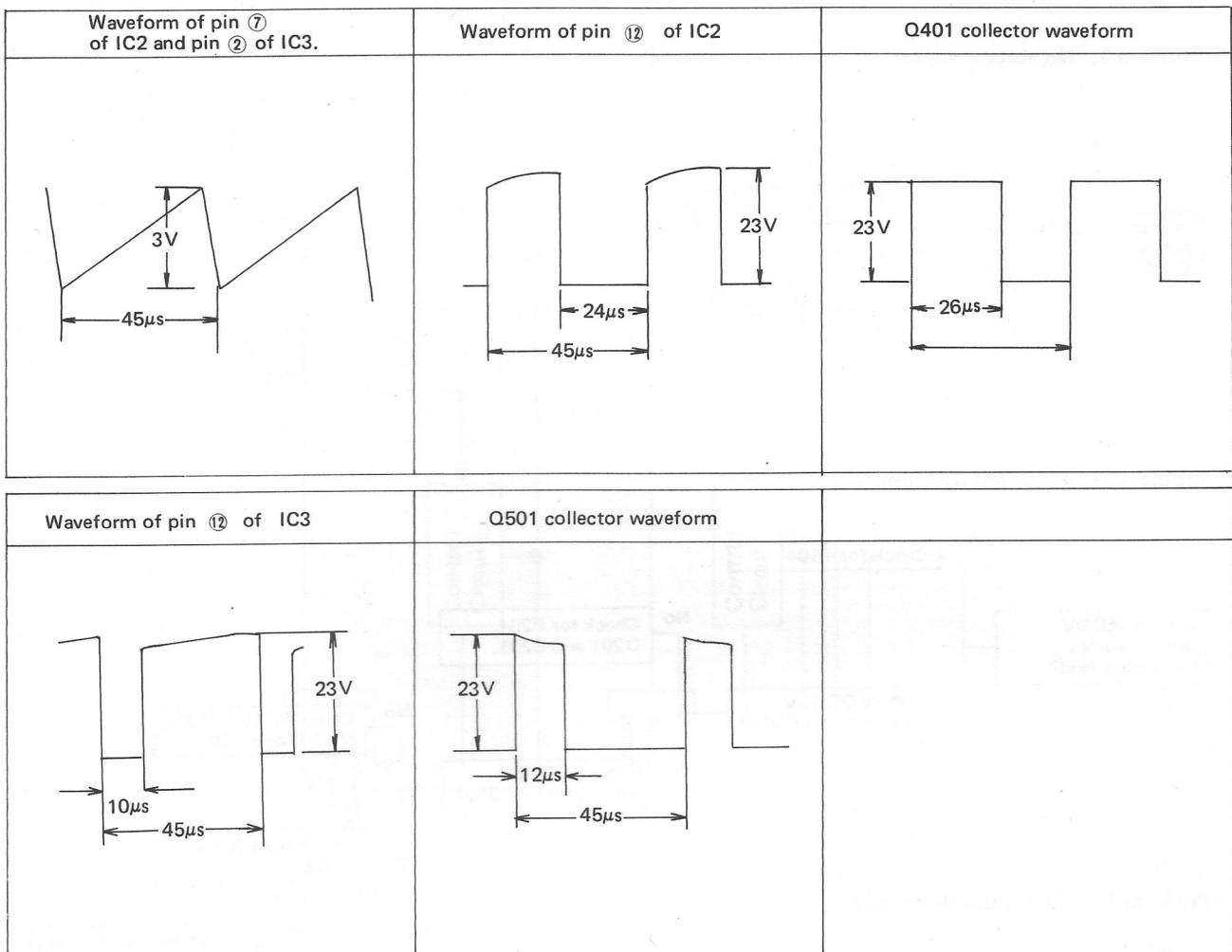
Problem 3: +12V is not developed.



Problem 4: +5V is not developed.

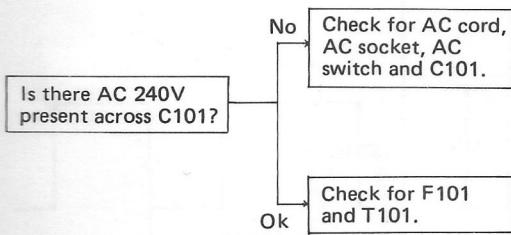


■ Waveforms of Each Parts

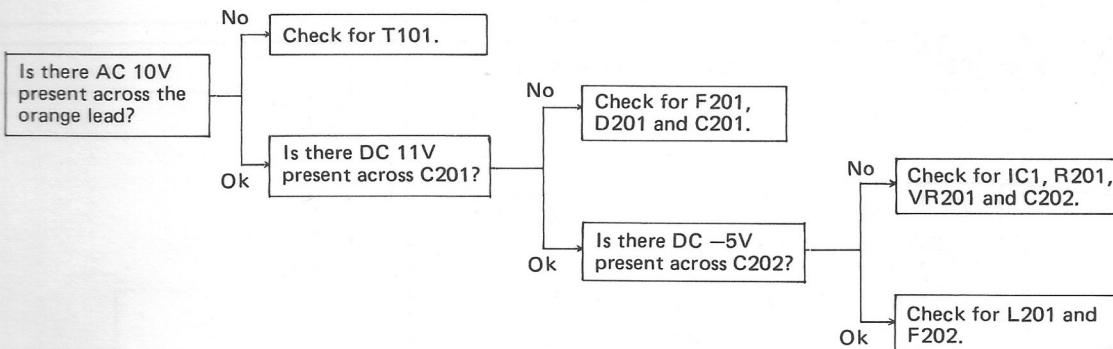


■ Trouble Shooting Chart (DBOXD0005PAZZ ---- for UK)

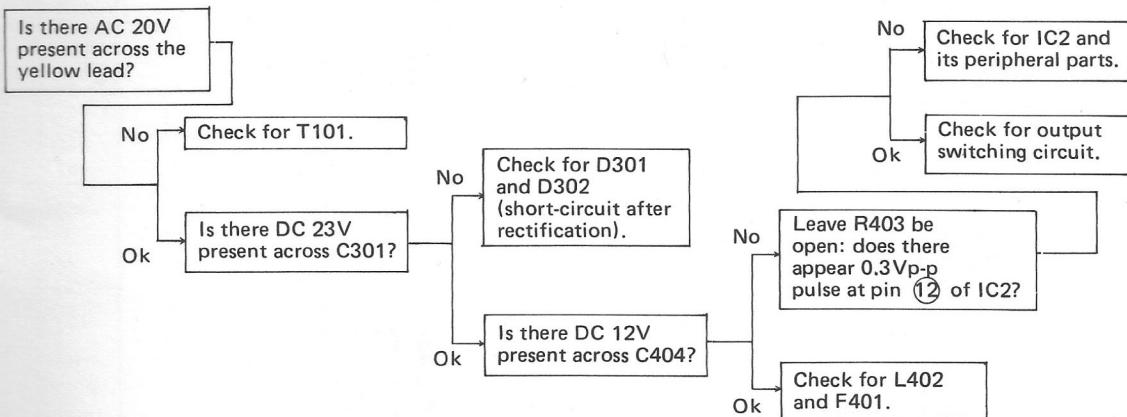
Problem 1: No voltage appears at any output terminal.



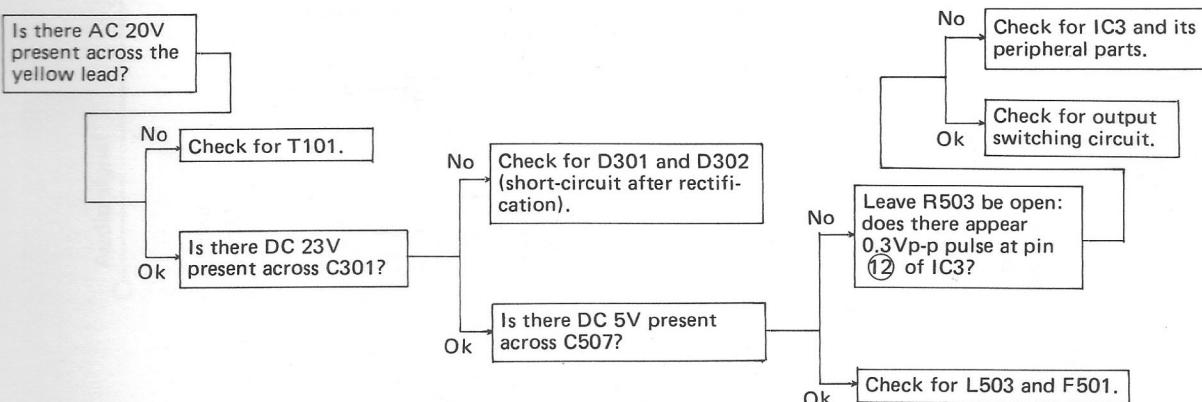
Problem 2: -5V is not developed.



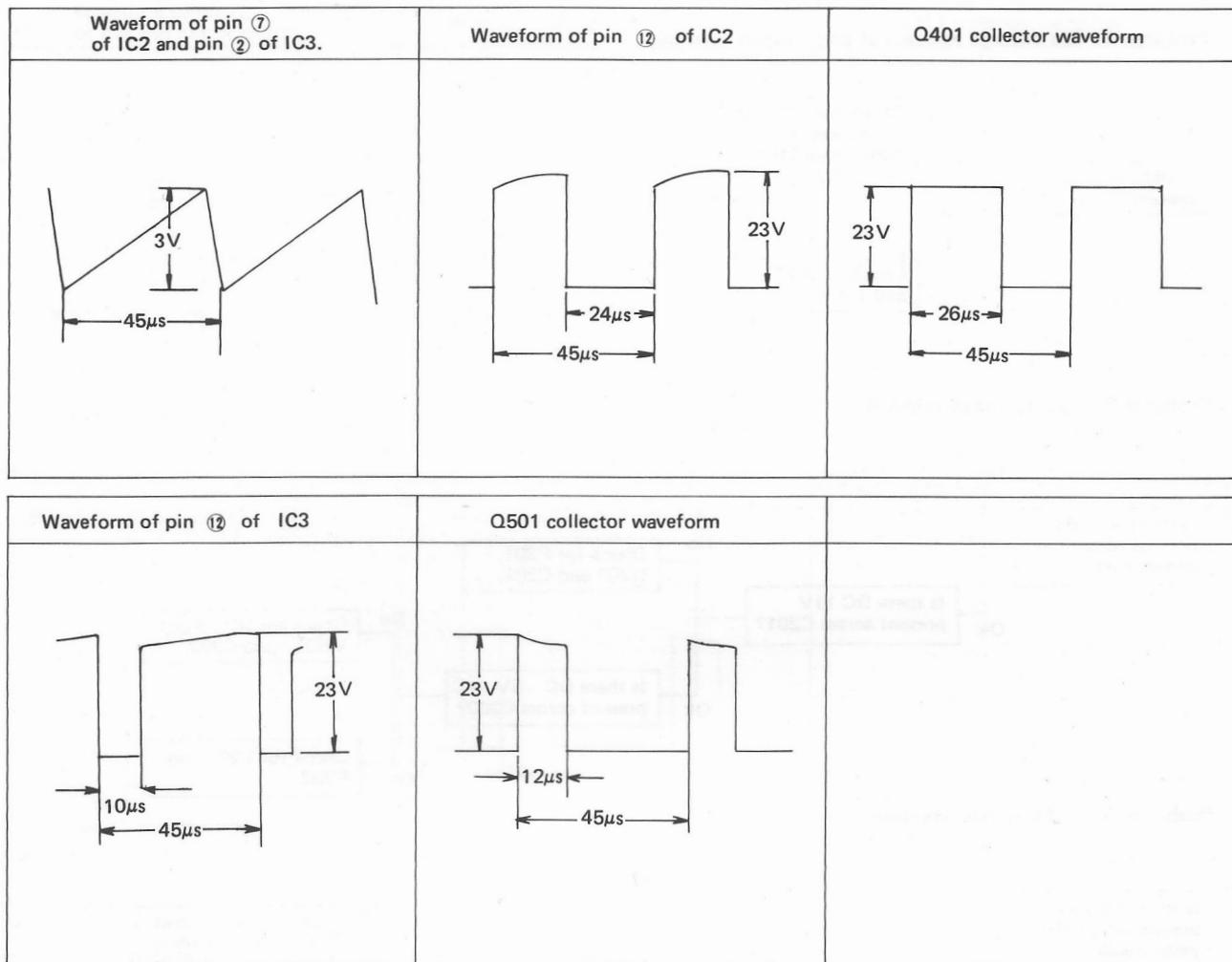
Problem 3: +12V is not developed.



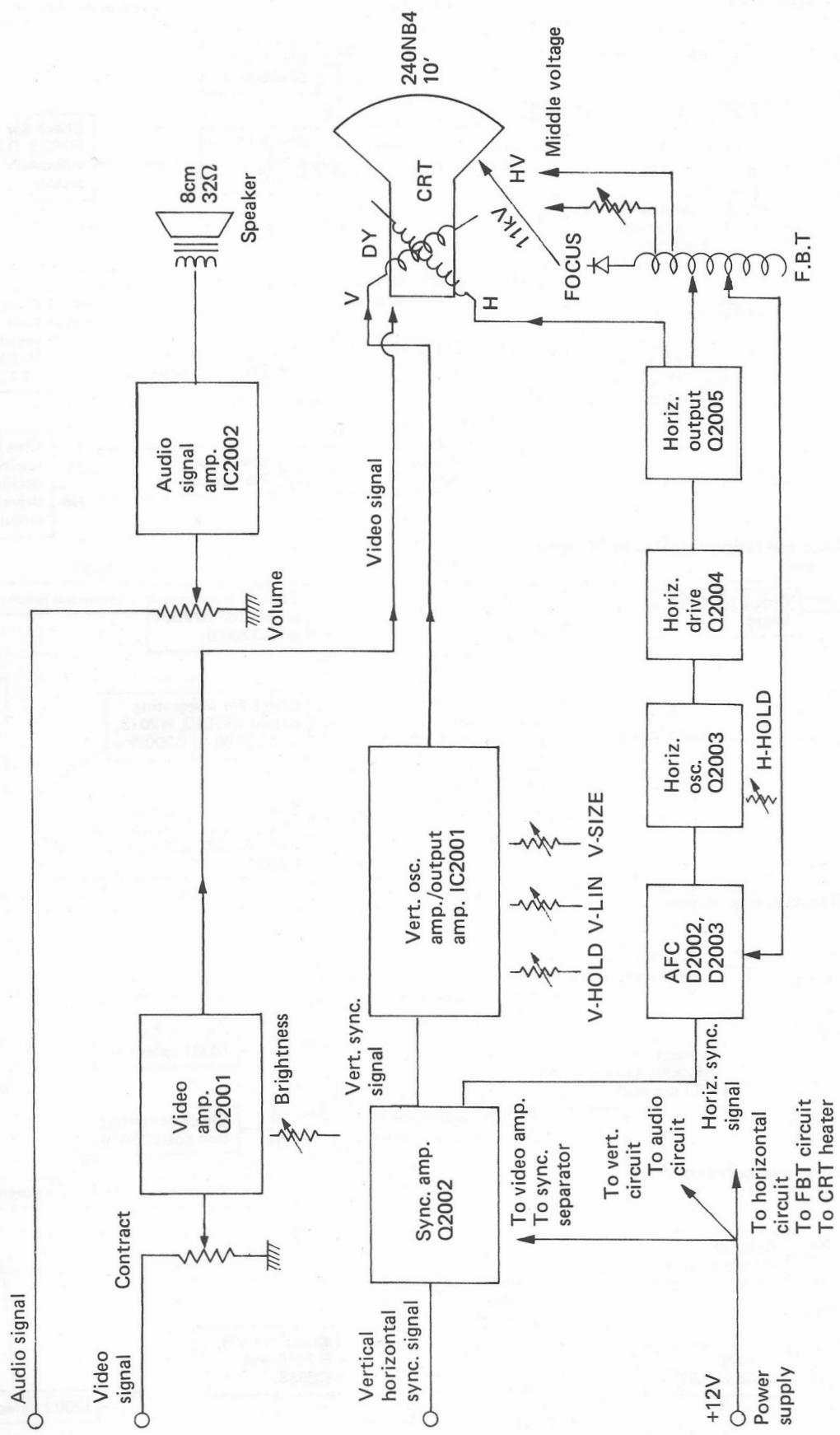
Problem 4: +5V is not developed.



■ Waveforms of Each Parts



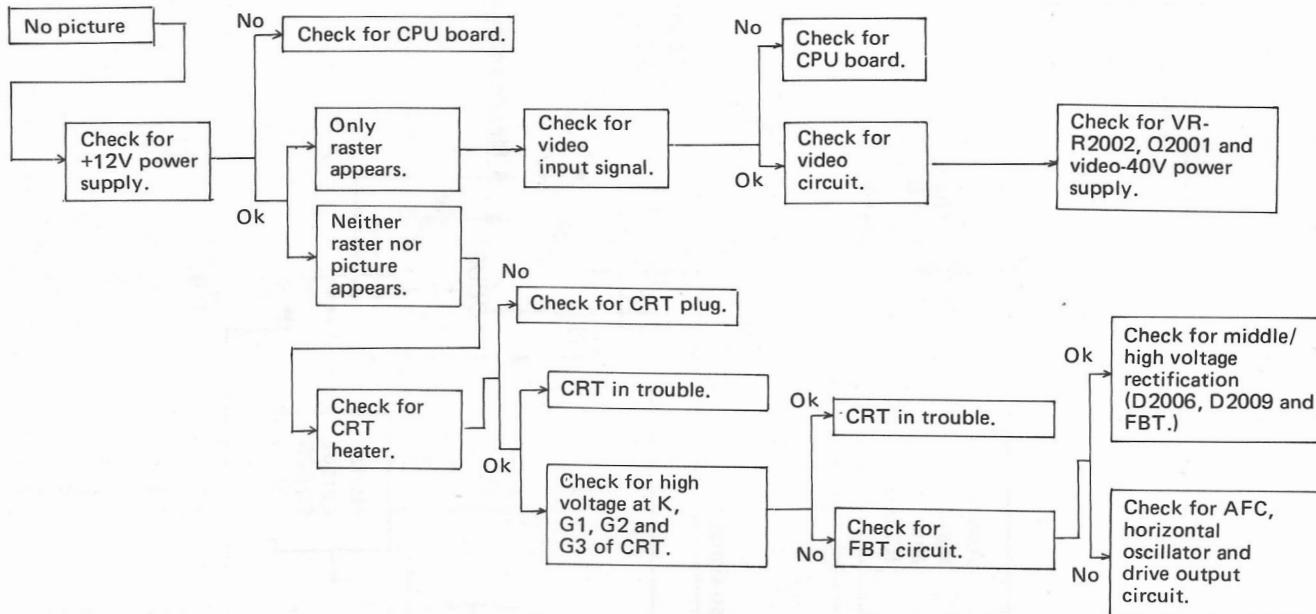
DISPLAY SECTION



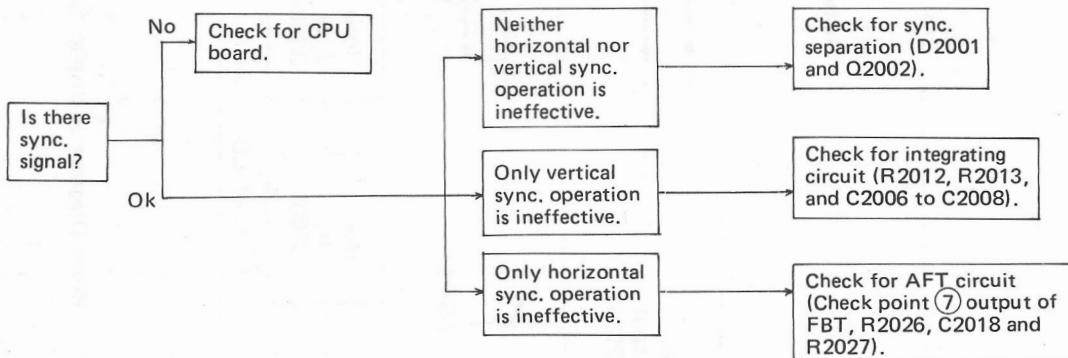
Block Diagram of Display Section

■ Trouble Shooting Chart

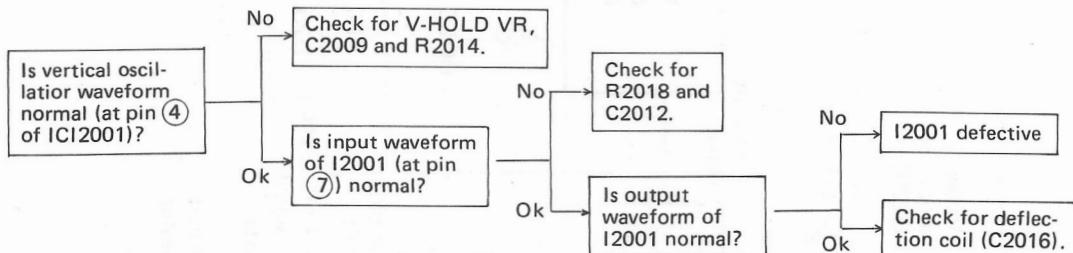
Problem 1: No picture appears.



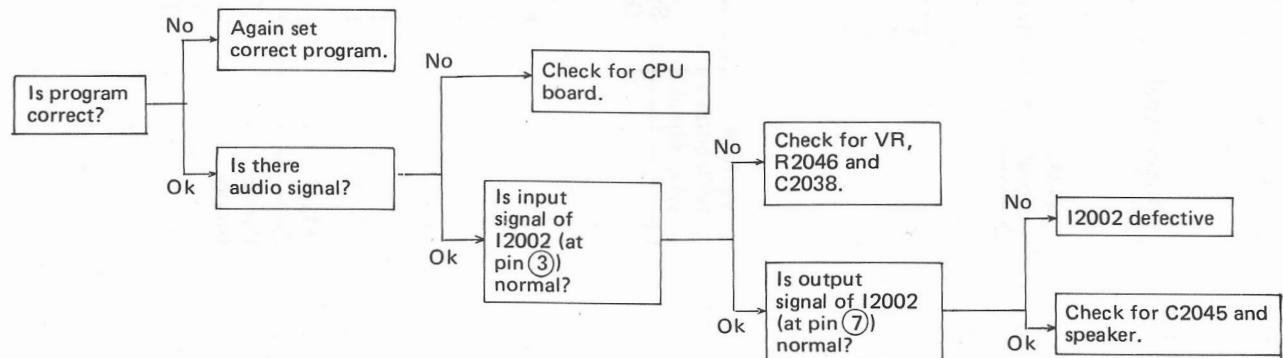
Problem 2: Sync operation remains ineffective.



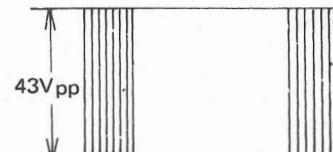
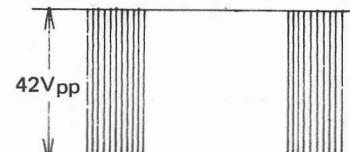
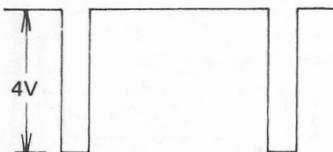
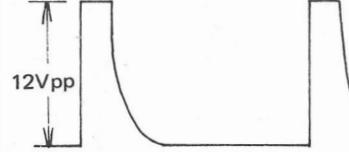
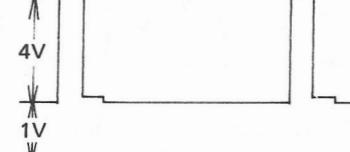
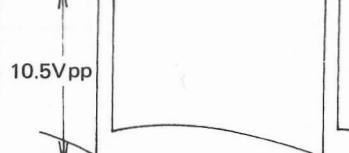
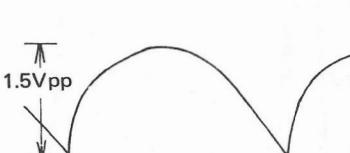
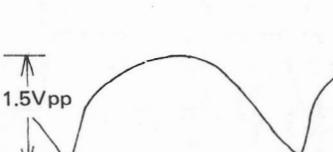
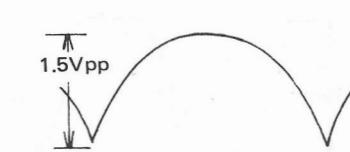
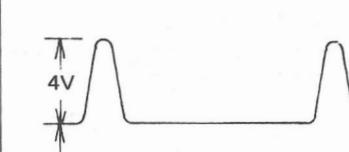
Problem 3: Raster is too narrow.

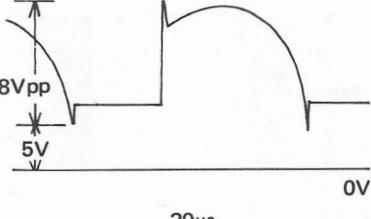
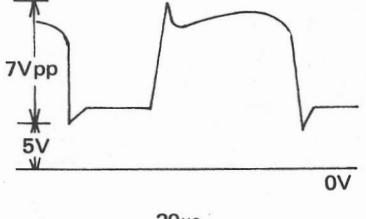
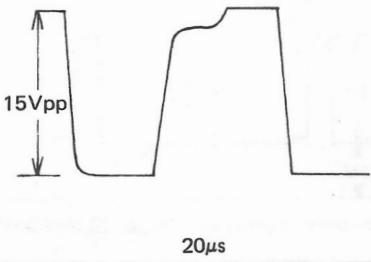
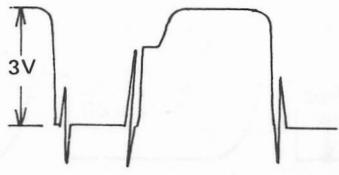
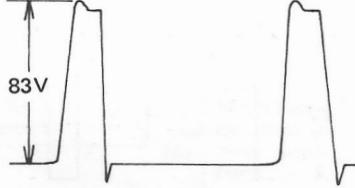
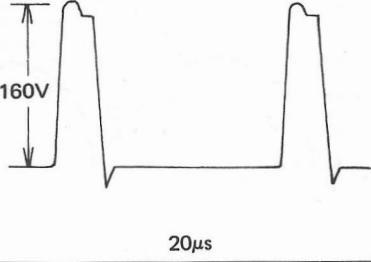
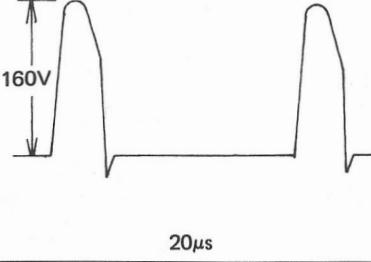
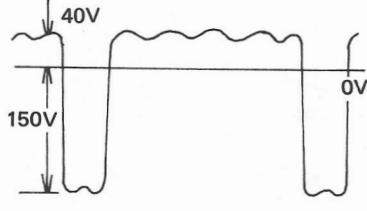
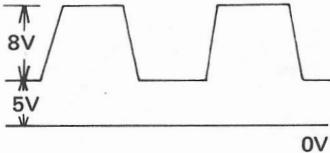
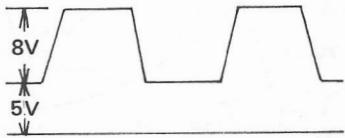


Problem 4: No sound comes out.



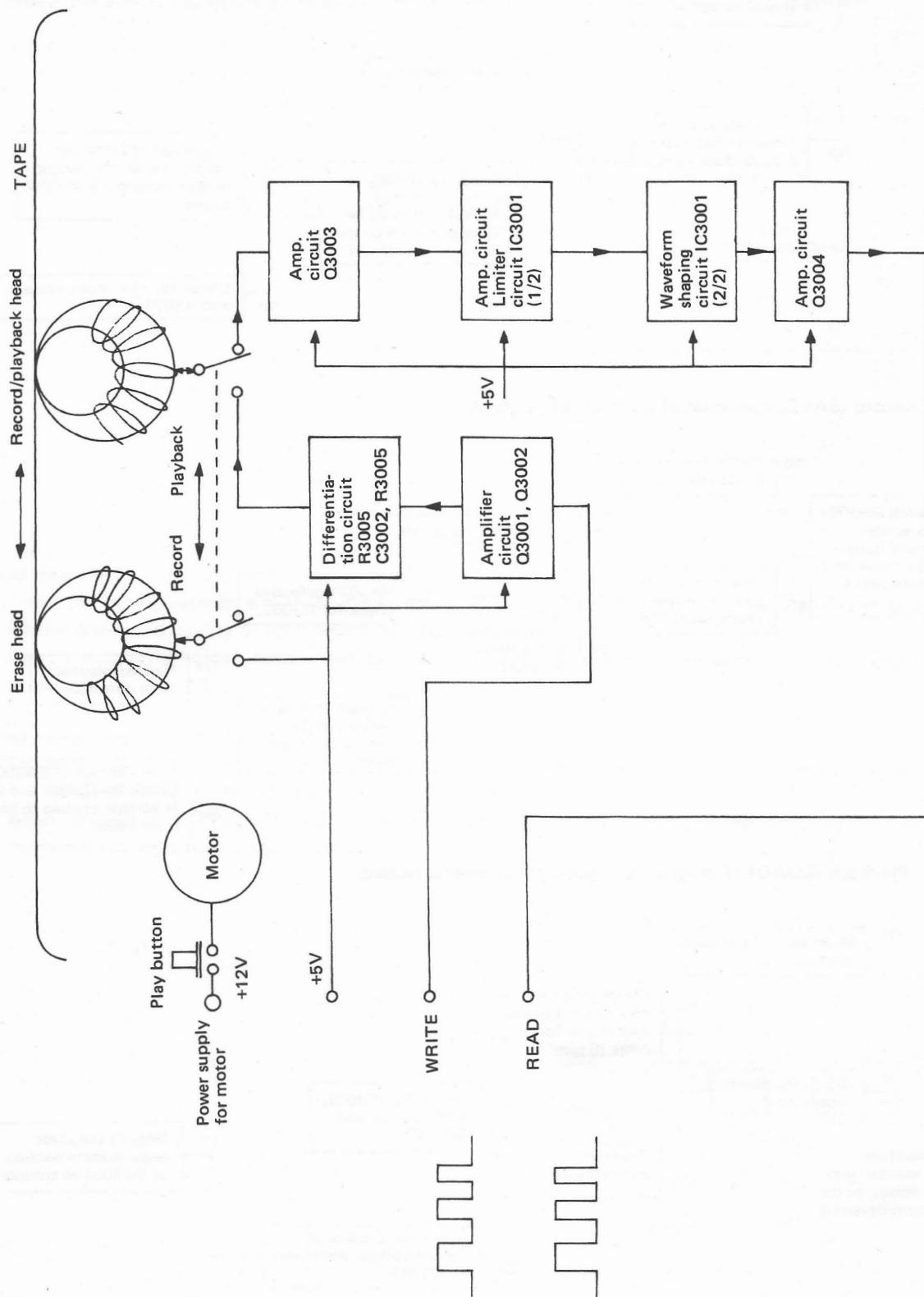
■ Waveforms of Display Section

Video input signal	Video output signal	Video output signal
① 	② 	③ 
Sync. input signal	Sync. signal amp. output	Vertical sync. signal
④ 	⑤ 	⑥ 
Vertical oscillator Circuit	Vertical output waveform	Vertical drive collector waveform
⑦ 	⑧ 	⑨ 
Voltage at pin ⑨ of RH-IX0015	Vertical deflection coil voltage waveform	Vertical linearity circuit waveform
⑩ 	⑪ 	⑫ 
Horizontal sync. signal waveform	AFC waveform	FBT waveform
⑬ 	⑭ 	⑮ 

Horizontal oscillator waveform	Horizontal oscillator emitter waveform	Horizontal oscillator output waveform
(16) 	(17) 	(18) 
Horizontal drive collector waveform	Horizontal output base waveform	Horizontal output pulse
(19) 	(20) 	(21) 
AFC pulse	Middle voltage FBT pulse	Video power supply pulse
(22) 	(23) 	(24) 
Audio input signal	Audio amplifier output waveform	Audio amplifier output waveform
(25) 	(26) 	(27) 
Audio output waveform		
(28) 		

The figures encircled by \bigcirc in the above refer to those of "Wiring Diagram" --- "Check Points of Waveforms".

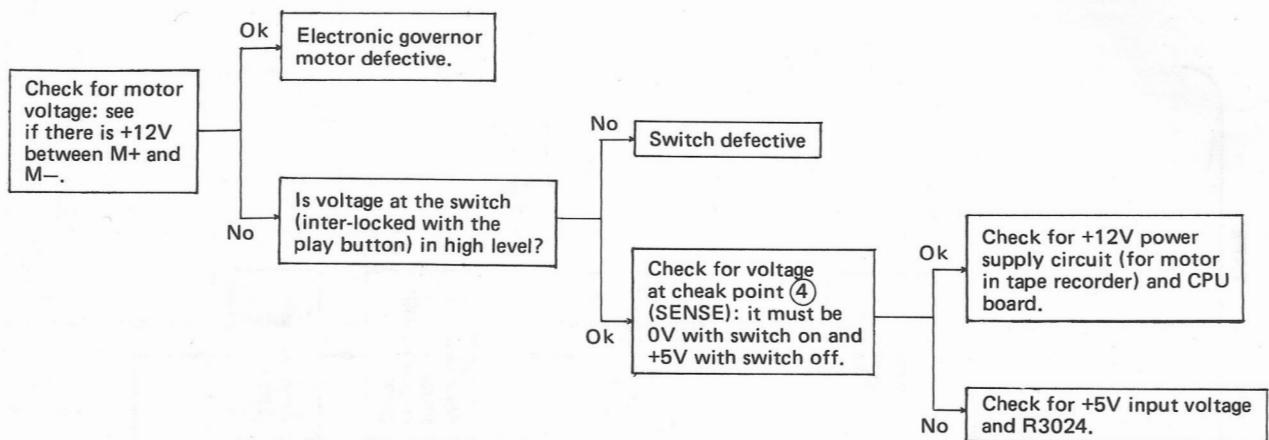
CASSETTE TAPE RECORDER SECTION



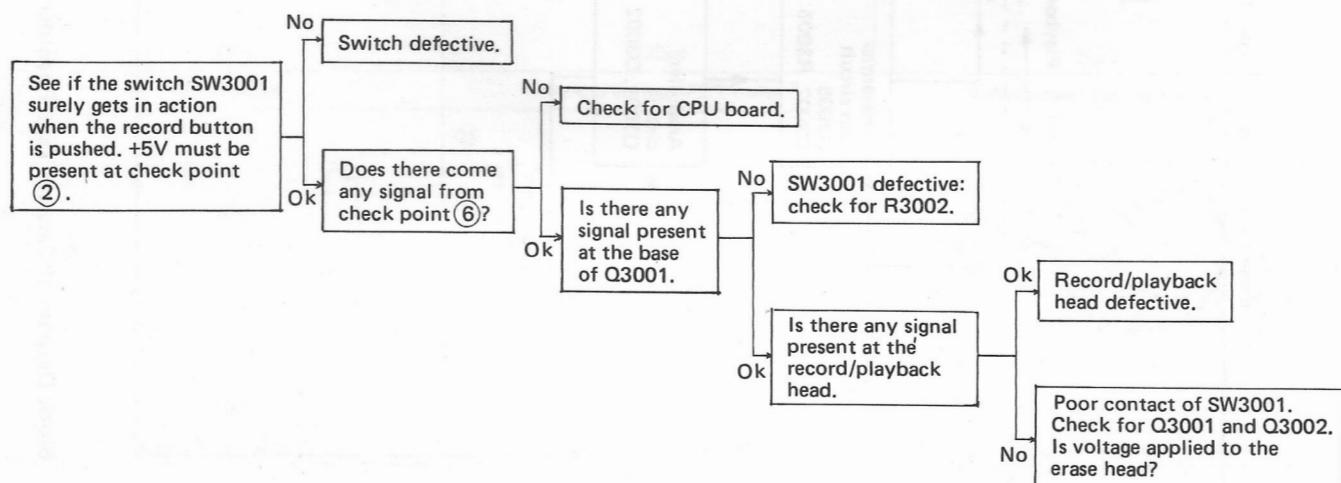
Block Diagram of Cassette Tape Recorder

■ Trouble Shooting Chart

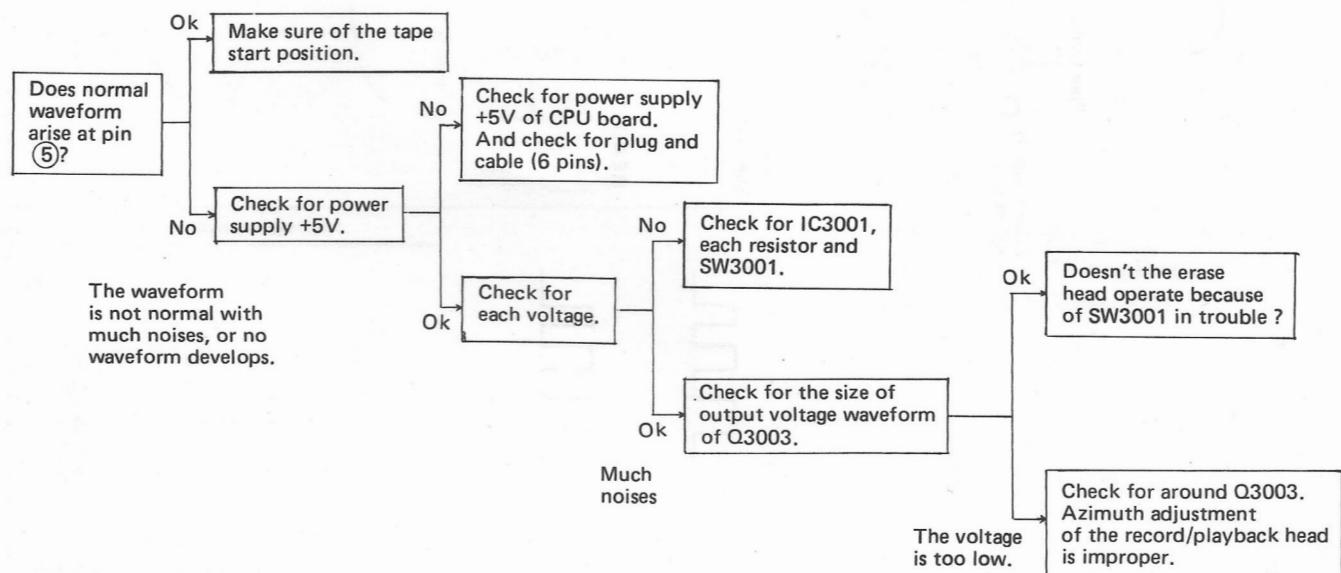
Problem 1: Even if the play button is pushed, neither motor rotates nor tape moves.



Problem 2: Record (SAVE) operation of program is impossible.



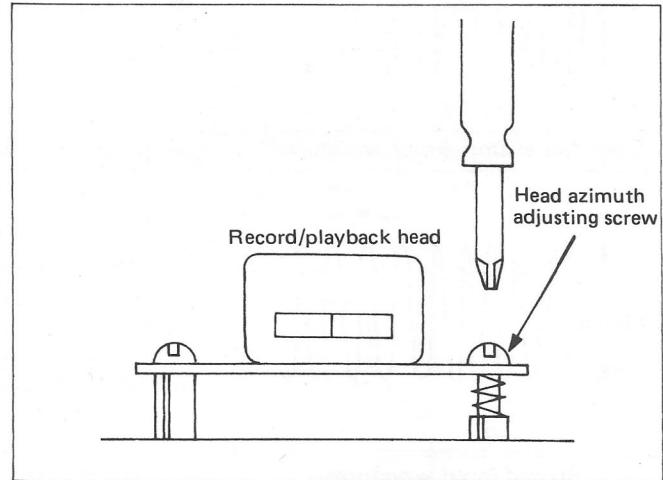
Problem 3: Playback (LOAD) of program is impossible, or error is caused.



■ Azimuth Adjustment and Head Cleaning

* Azimuth adjustment of record/playback head

1. Connect a synchroscope to the collector of Q3003.
2. Load a test tape (TEAC, 3kHz-signal recorded) and play it back.
3. Rotate the azimuth adjusting screw so that the waveform on a synchroscope will be the maximum.



Head cleaning

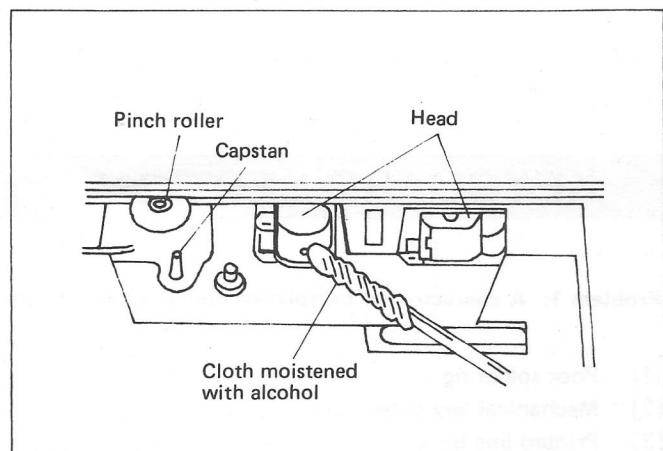
Clean the heads, capstan and pinch roller often, to remove dust and tape residue. Foreign material on them impairs the sound quality of both recording and playback.

Open the cassette holder, remove the tape, push the play button and clean them with a soft cloth moistened in alcohol.

Erase protection

To protect a cassette tape from being accidentally erased it was designed with two removable tabs. When the tabs are removed, it is impossible to push the record button.

When no cassette is inside the machine, no pushing of the record button is allowed, either. Nevertheless, pushing the button strongly may cause a trouble.



■ Waveforms of Cassette Tape Recorder

1st stage amp. output waveform	Operational amp. input waveform	Operational amp. input waveform
①	②	③
Operational amp. input waveform	Operational amp. output waveform	Output waveform
④	⑤	⑥
Record input waveform	Record amp. waveform	Record amp. waveform
⑦	⑧	⑨
Head input waveform		
⑩		

The figures encircled by ○ correspond to those of
"Wiring Diagram" — "Check Points of Waveforms".

KEYBOARD SECTION

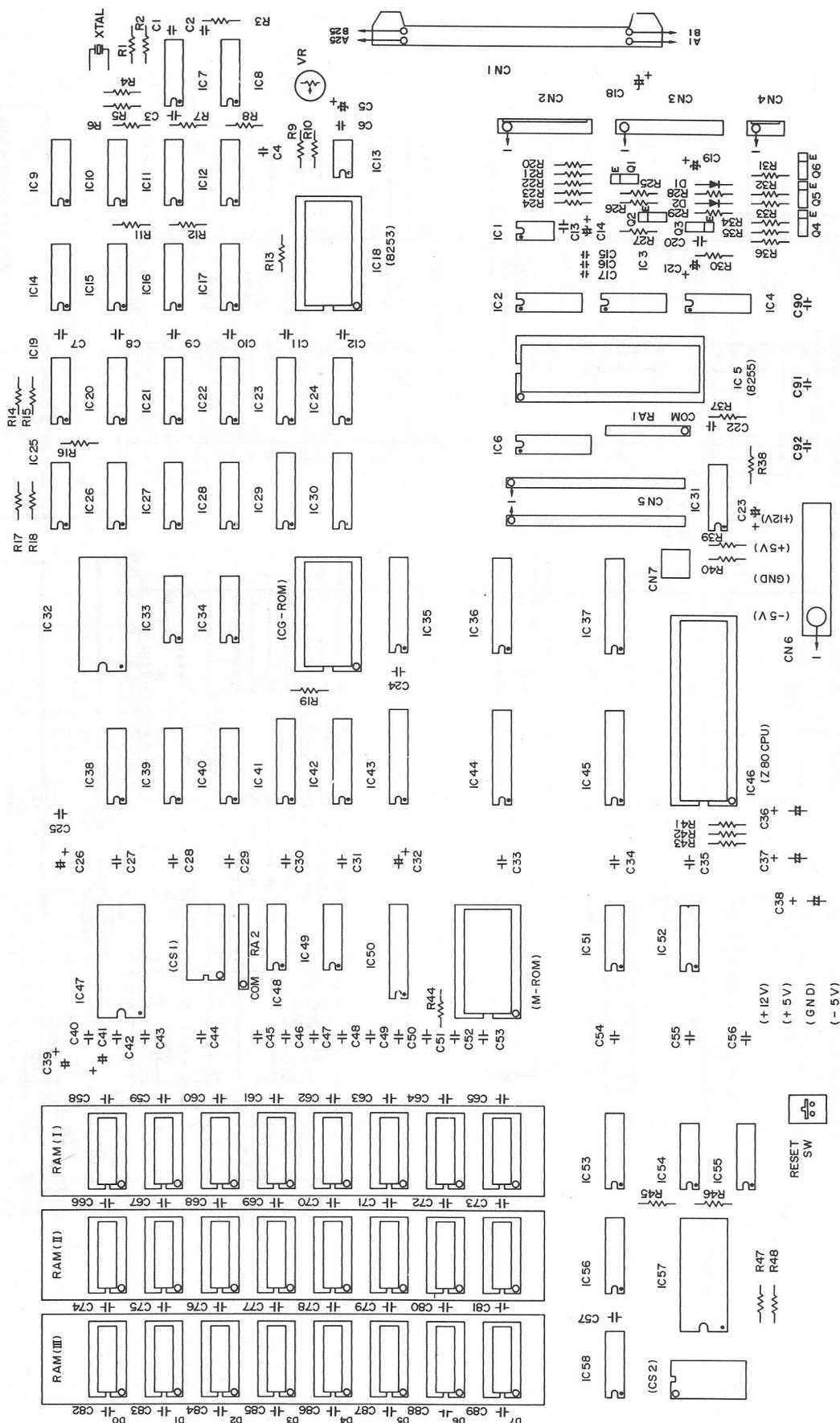
Problem 1: A character isn't displayed even if a key is pushed.

- (1) Poor soldering
- (2) Mechanical key defective
- (3) Printed line broken

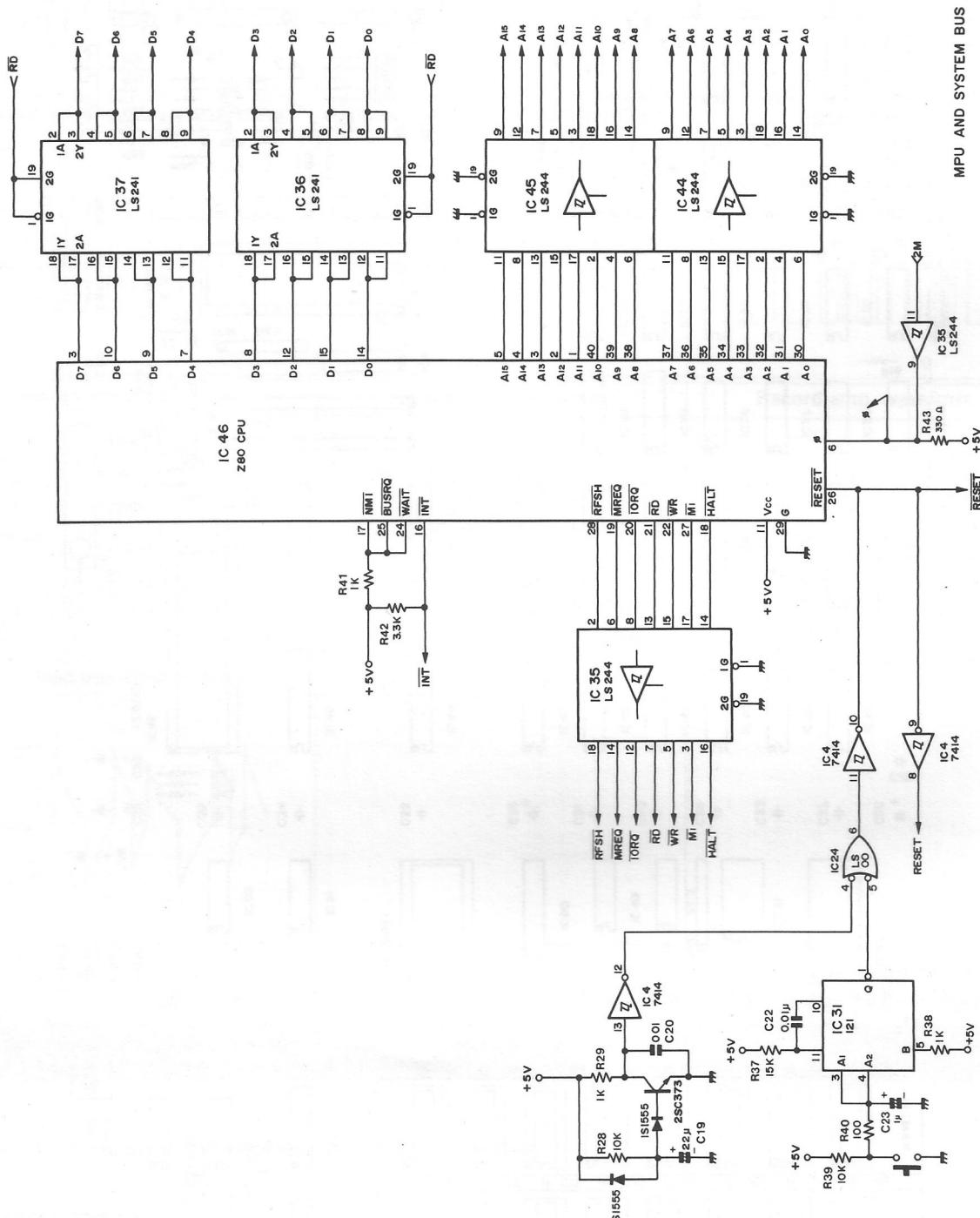
If there is nothing abnormal in the above checks, proceed with the checkings of "CPU Board Section".

CIRCUIT DIAGRAM OF MZ-80K

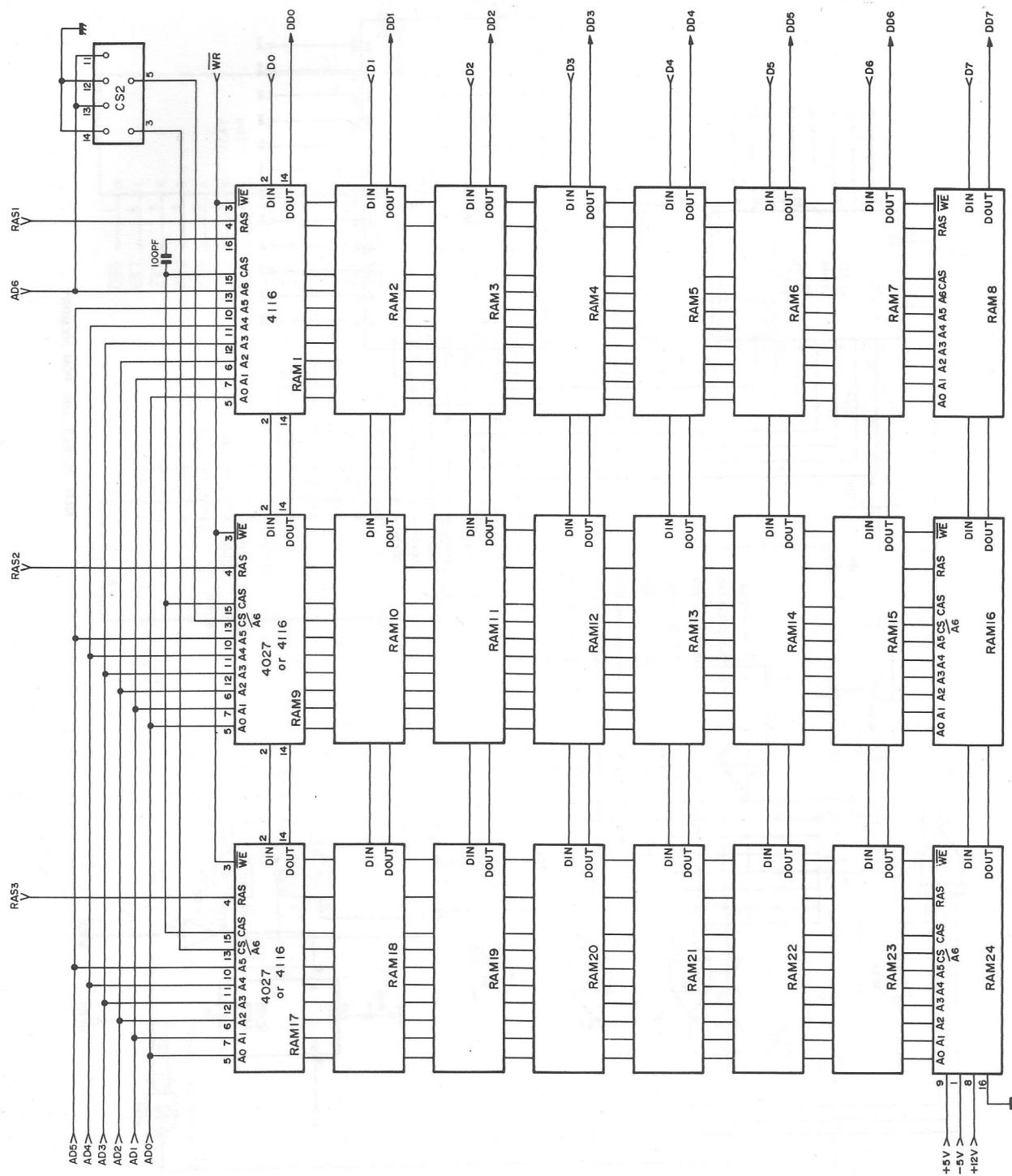
■ Symbols of CPU Section



■ Circuit Diagram (1) of CPU Board Section

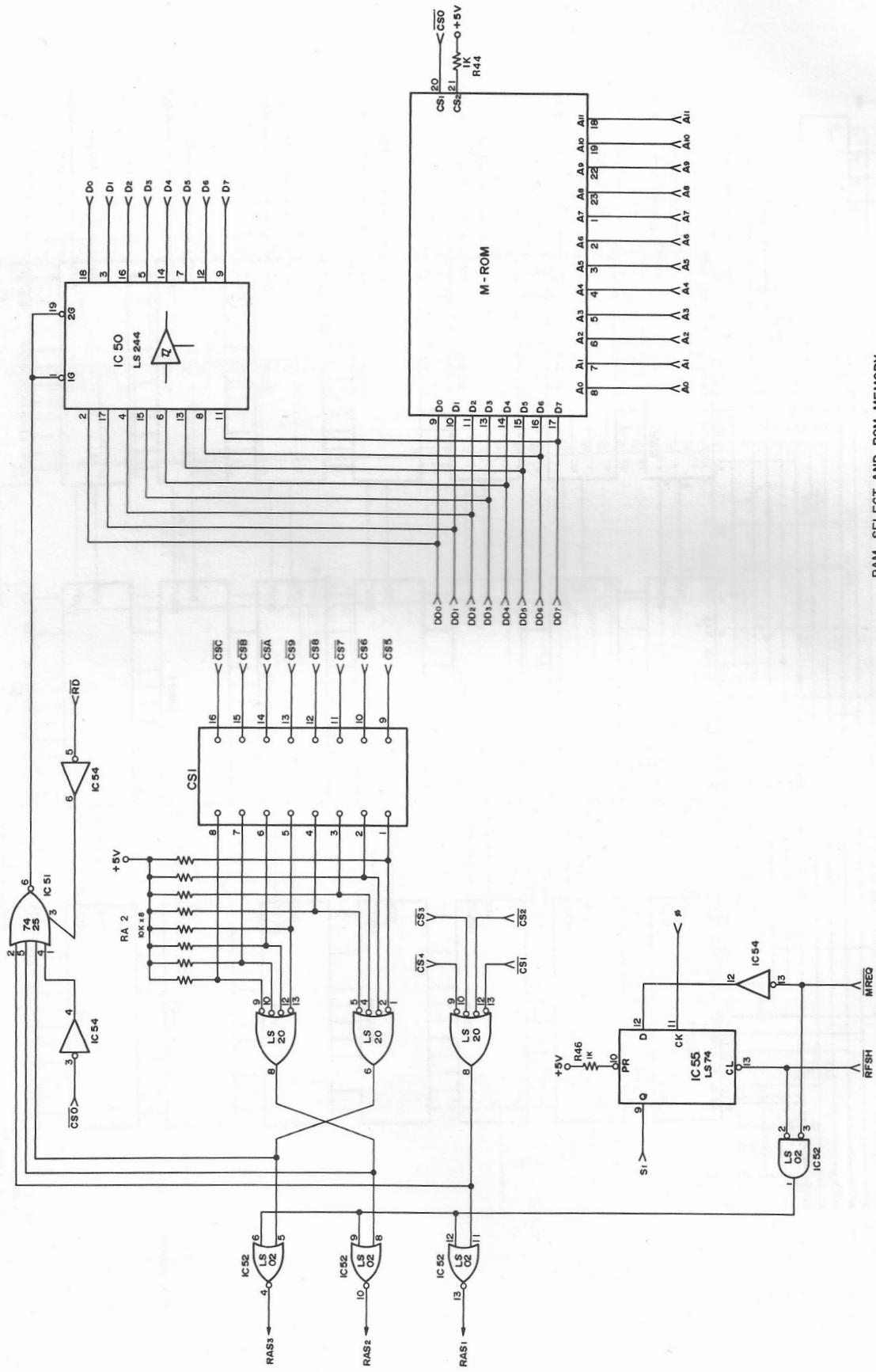


■ Circuit Diagram (2) of CPU Board Section



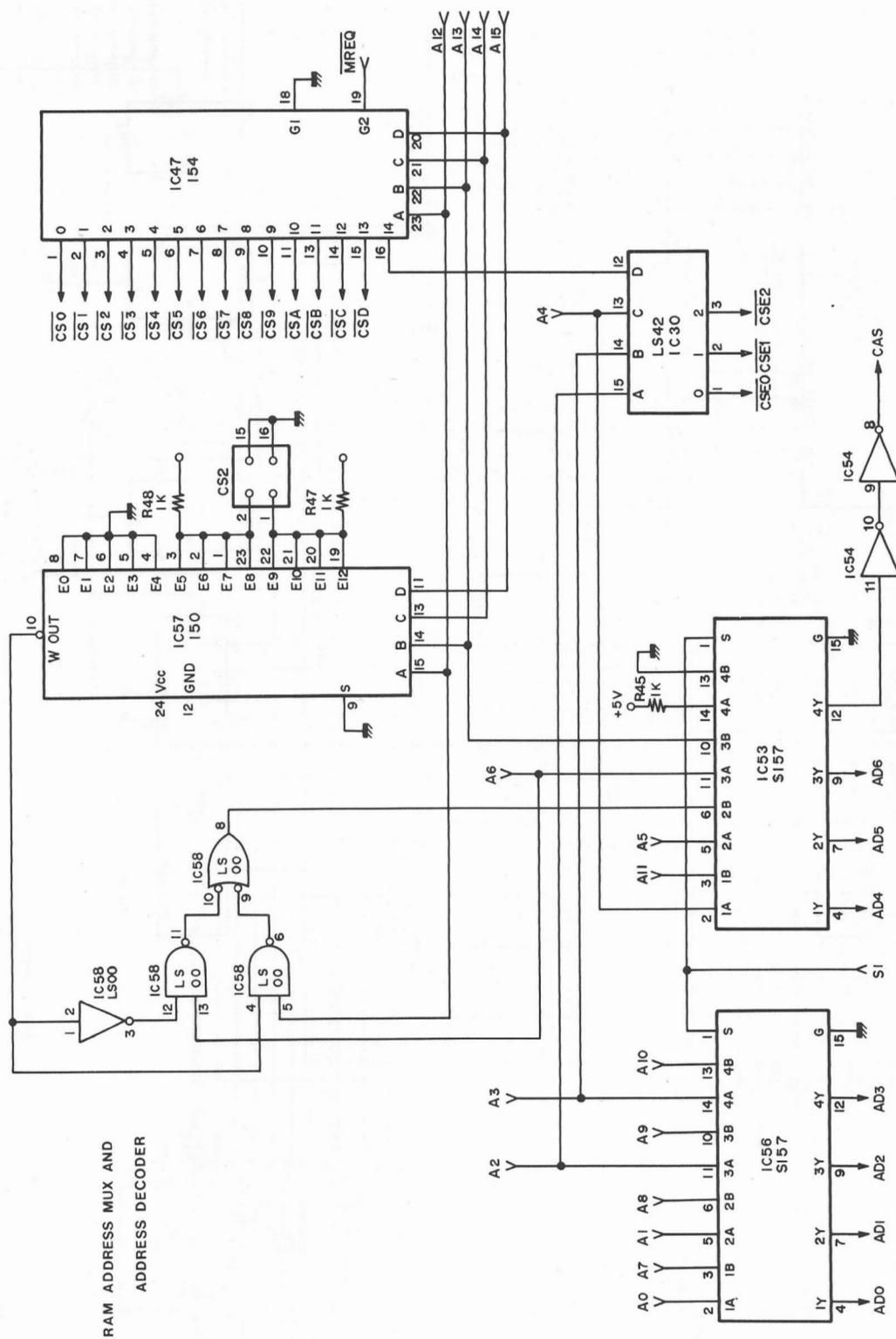
RAM MEMORY

■ Circuit Diagram (3) of CPU Board Section

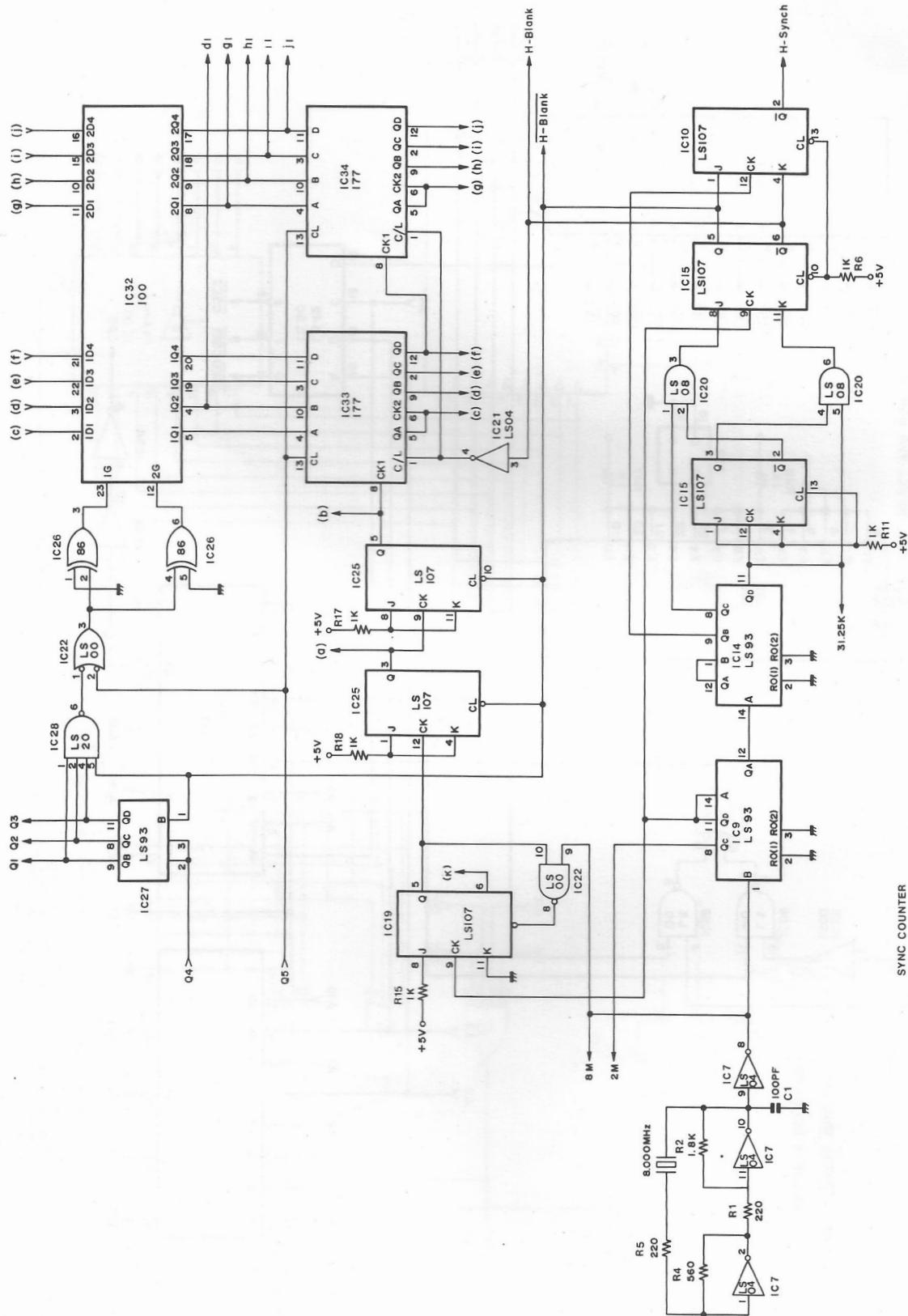


RAM SELECT AND ROM MEMORY

■ Circuit Diagram (4) of CPU Board Section

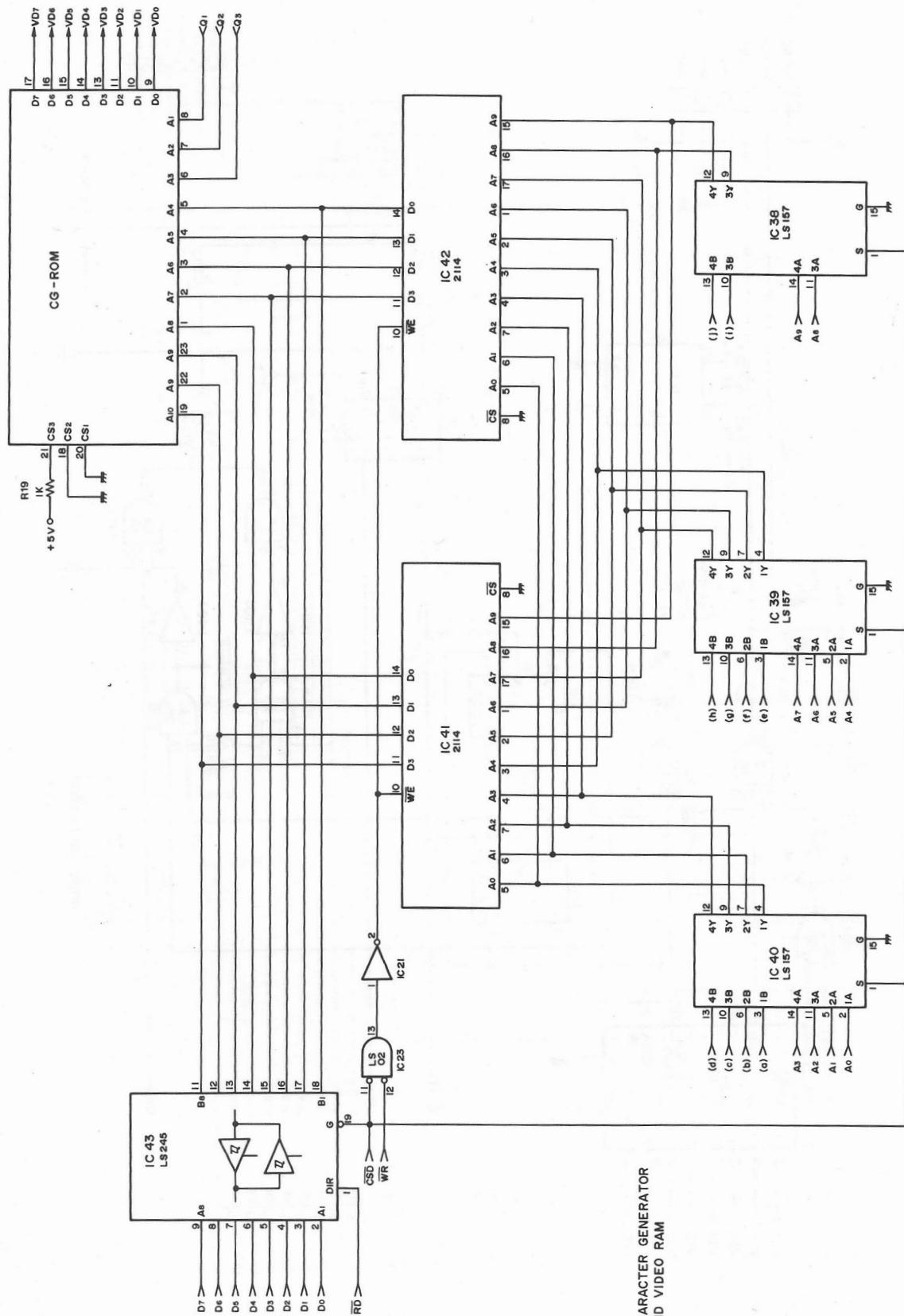


■ Circuit Diagram (5) of CPU Board Section



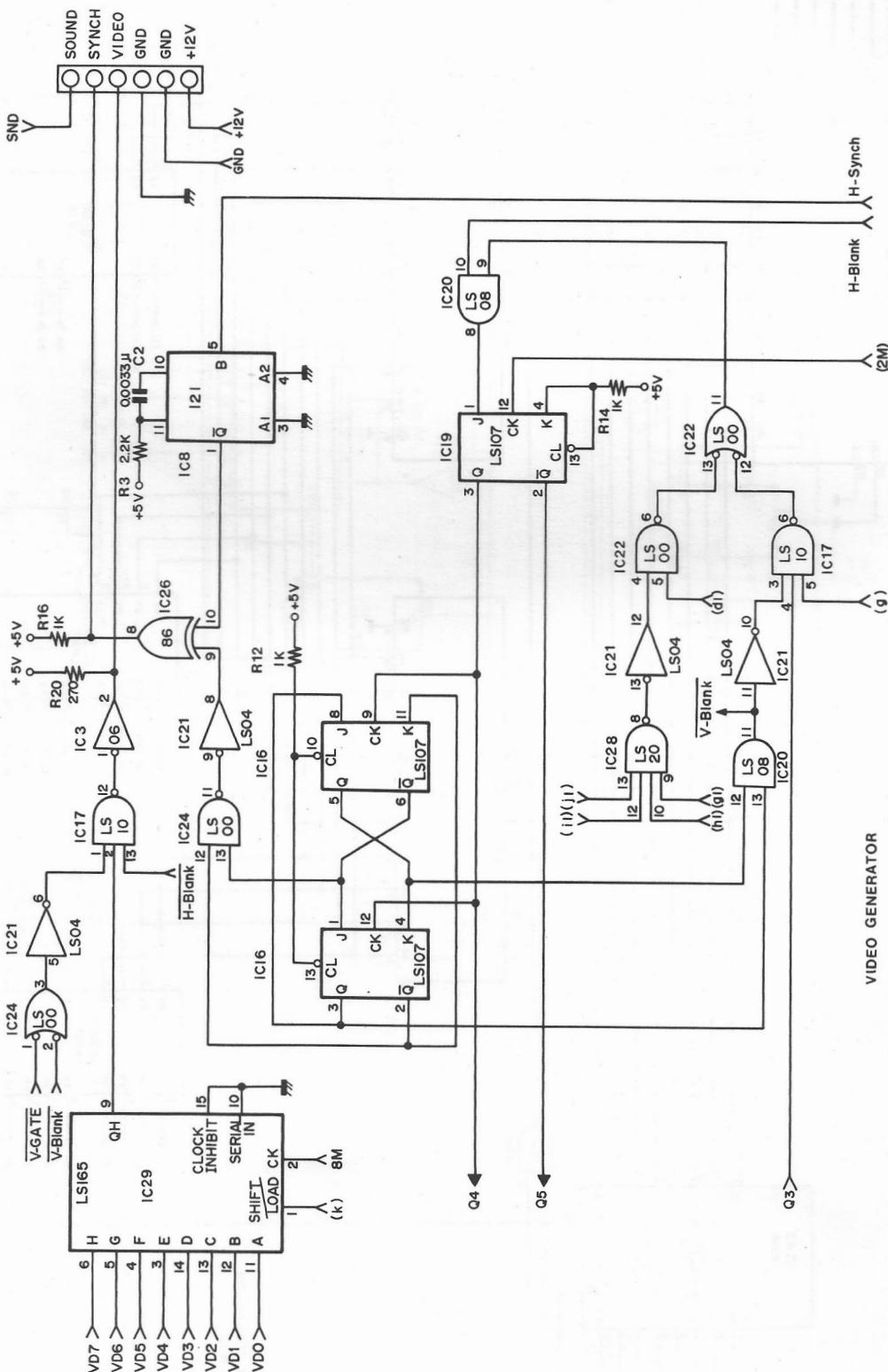
SYNC COUNTER

■ Circuit Diagram (6) of CPU Board Section

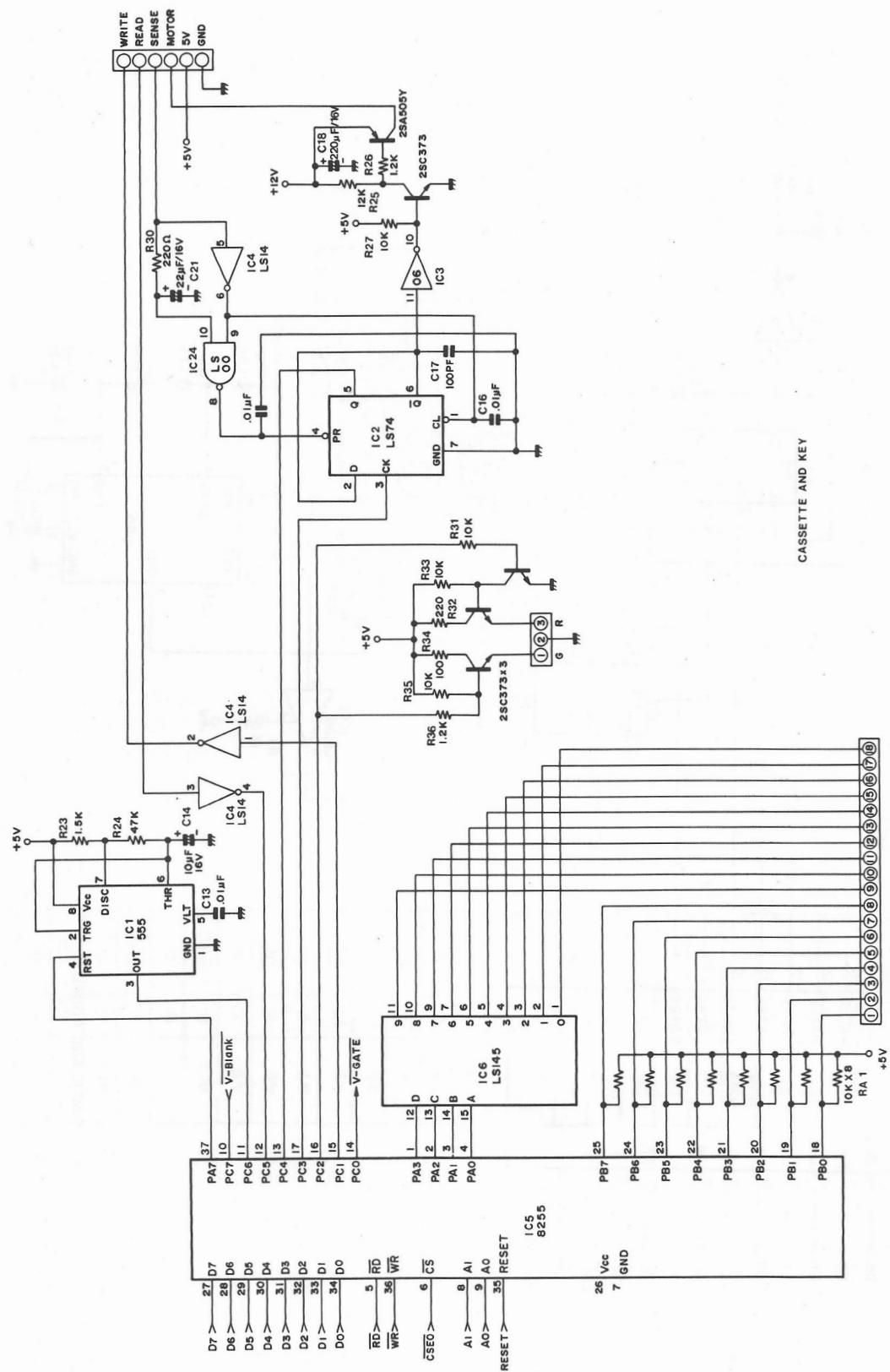


CHARACTER GENERATOR
AND VIDEO RAM

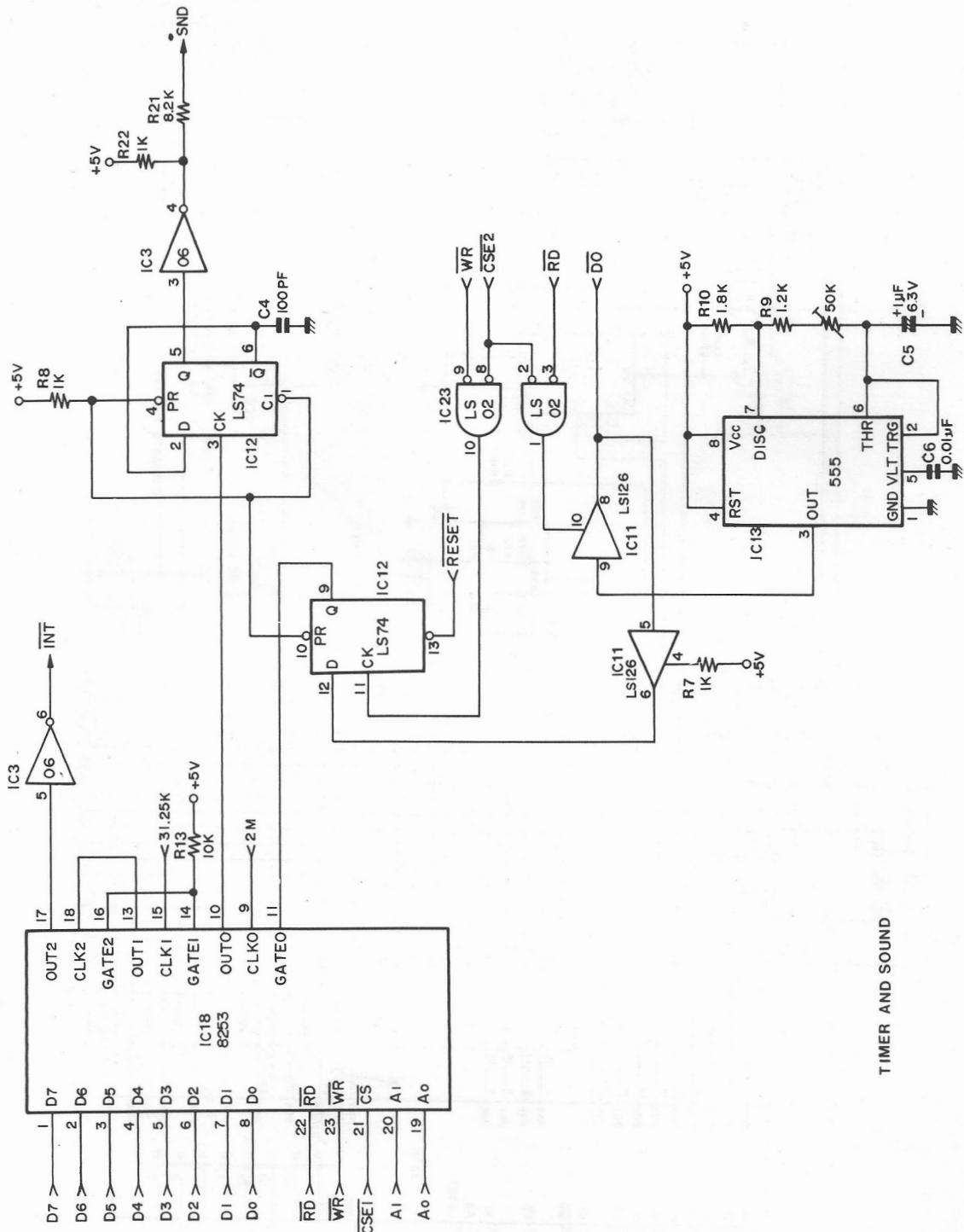
■ Circuit Diagram (7) of CPU Board Section



■ Circuit Diagram (8) of CPU Board Section

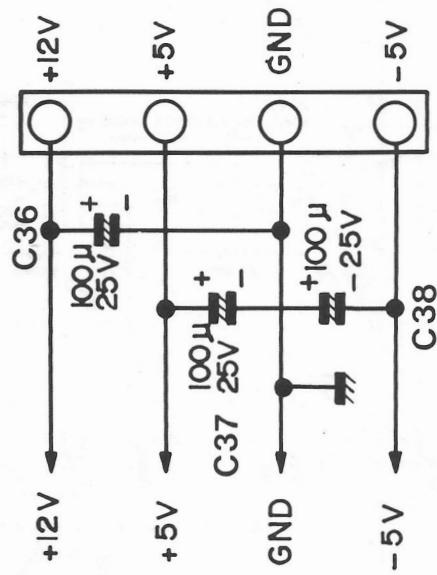


■ Circuit Diagram (9) of CPU Board Section



TIMER AND SOUND

■ Circuit Diagram (10) of CPU Board Section

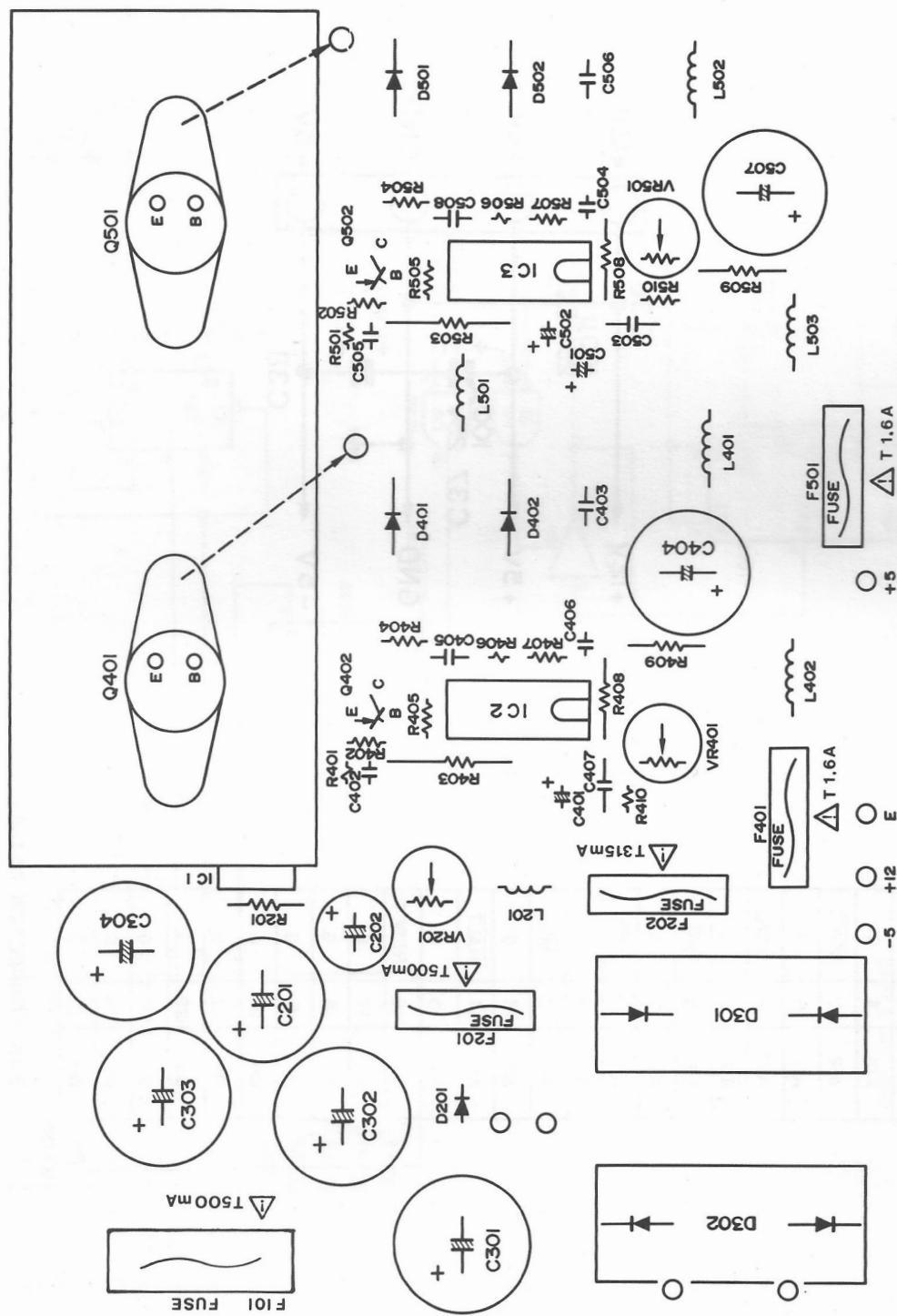


A	B
A15	1 G
A14	2 \overline{INT}
A13	3 G
A12	4 \overline{MREQ}
A11	5 G
A10	6 \overline{IORQ}
A9	7 G
A8	8 \overline{RD}
A7	9 G
A6	10 \overline{WR}
A5	11 G
A4	12 \overline{MI}
A3	13 G
A2	14 \overline{HALT}
A1	15 G
A0	16 RESET
G	17 G
D7	18 G
D6	19 G
D5	20 G
D4	21 G
D3	22 G
D2	23 G
D1	24 G
DO	25 G

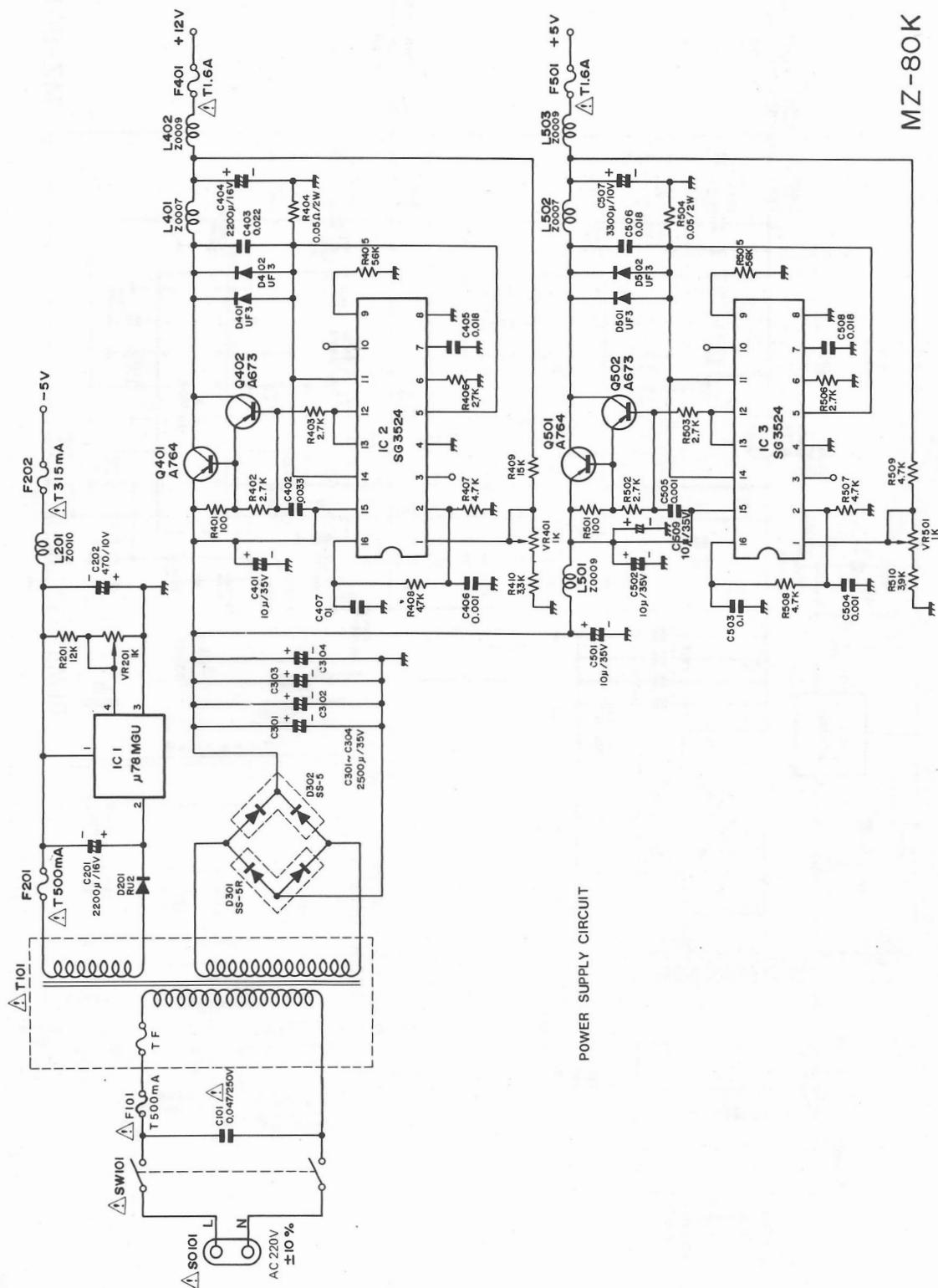
△
(MARK)

BUS CONNECTOR DETAIL

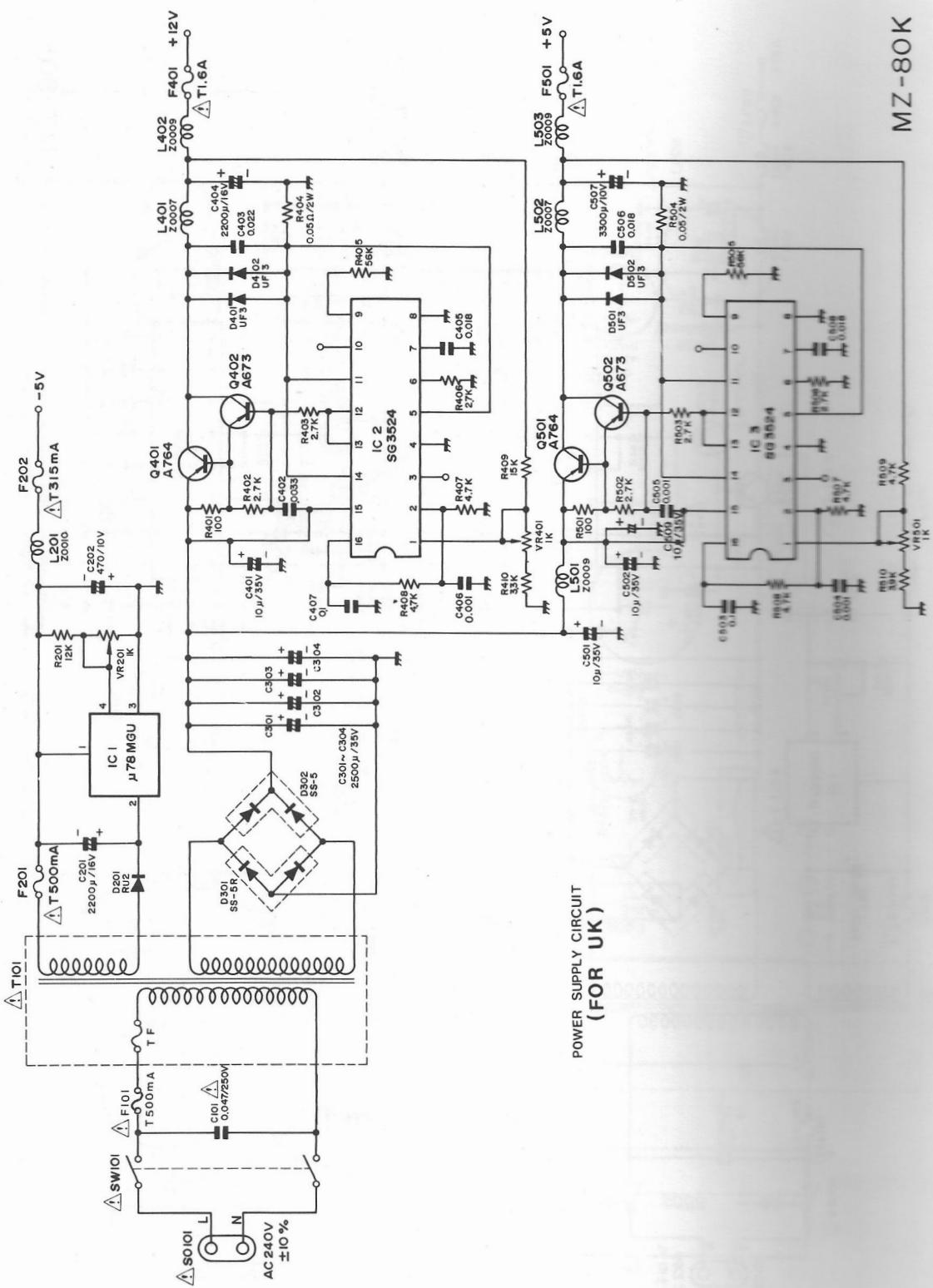
■ Symbols of Power Supply Section



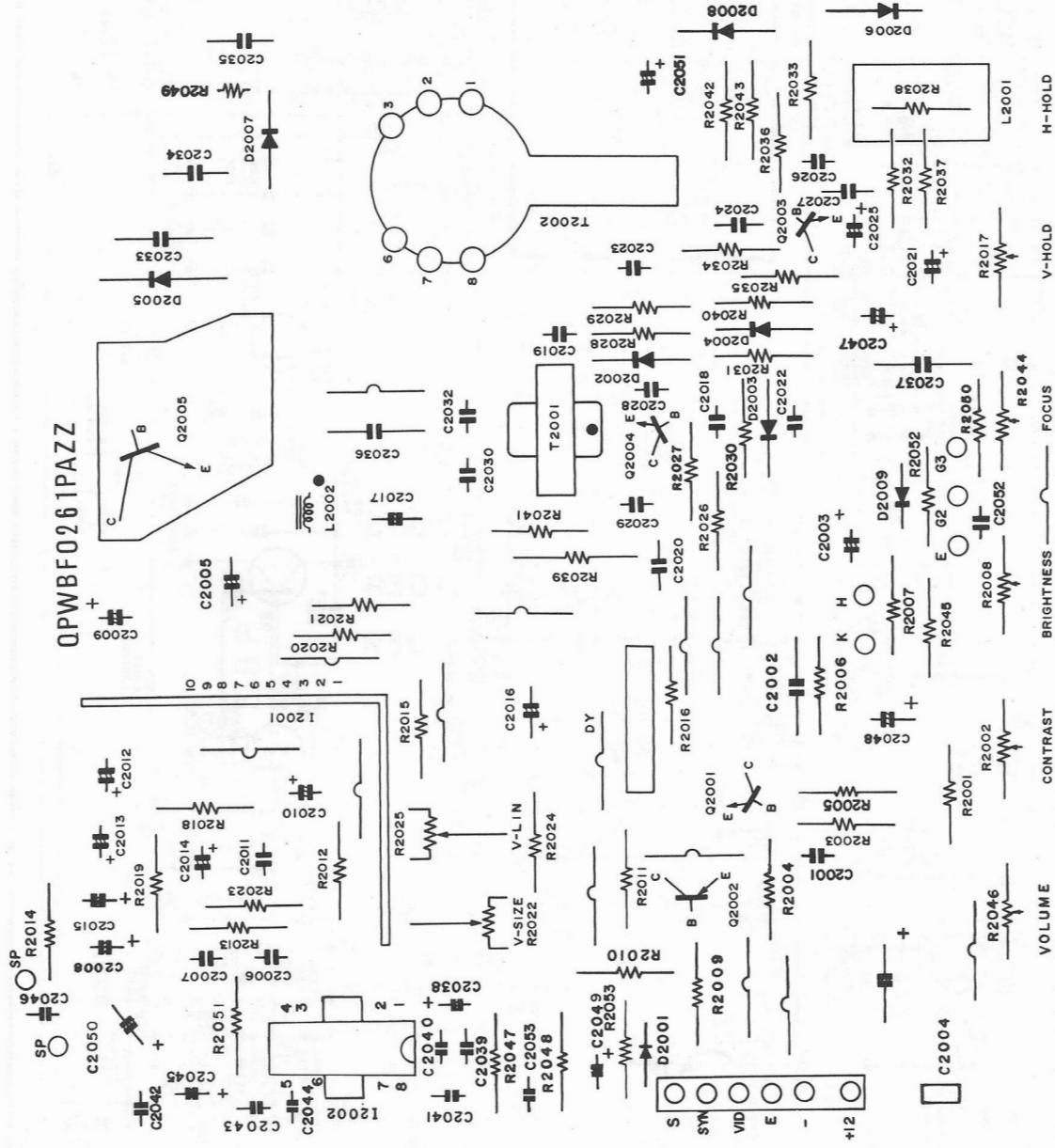
■ Wiring Diagram of Power Supply Section



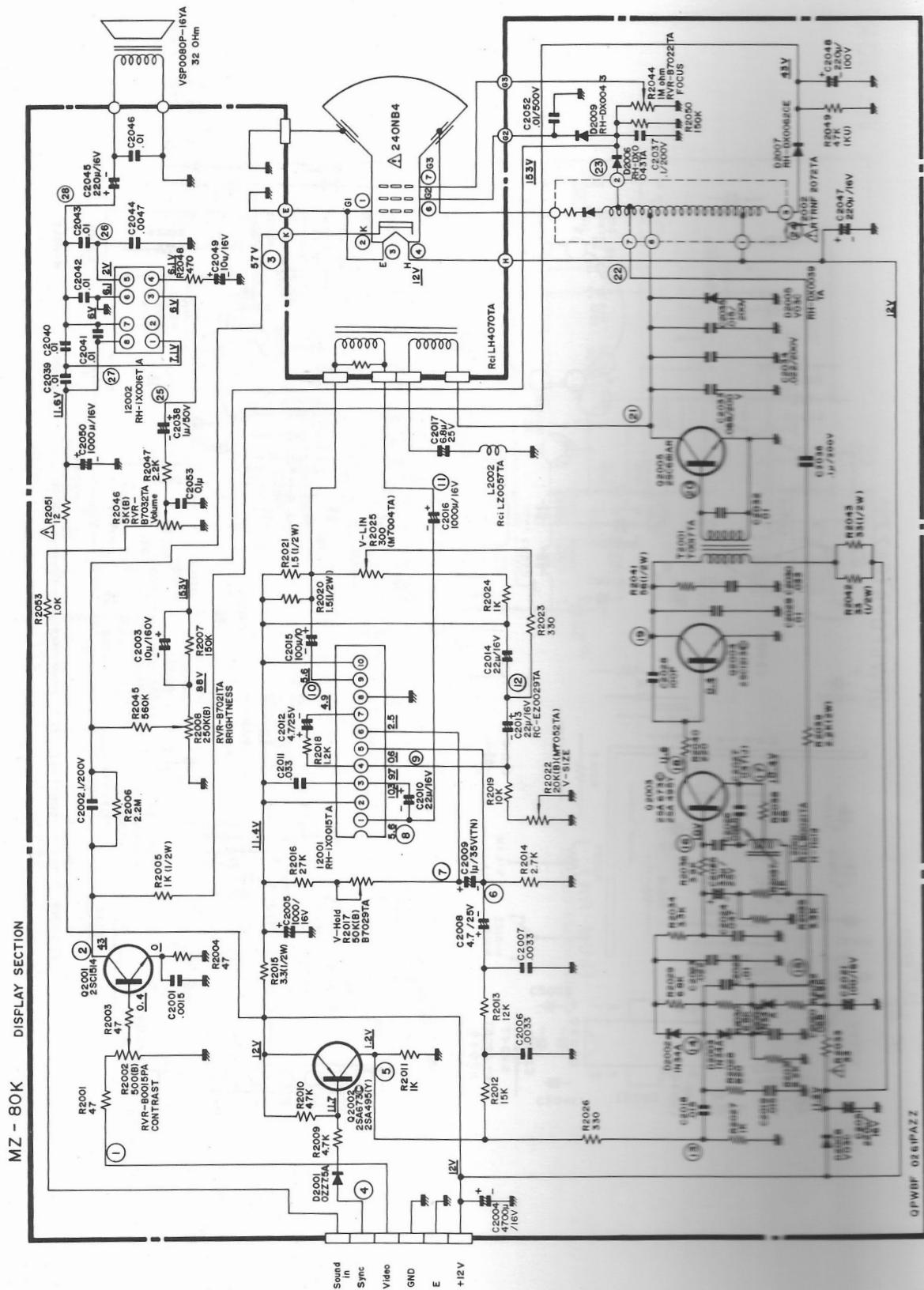
Wiring Diagram of Power Supply Section (for UK)



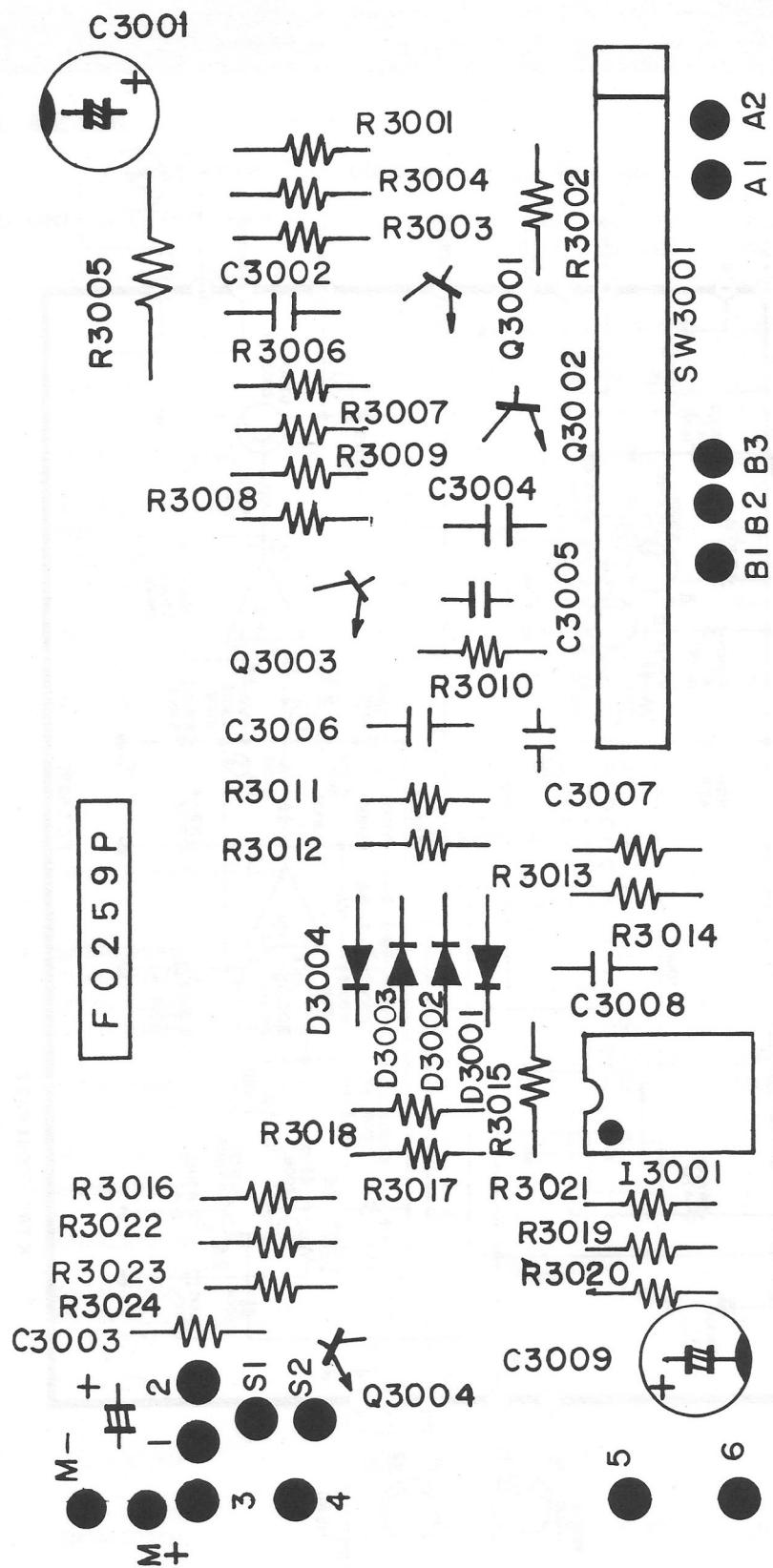
■ Symbols of Display Section



■ Wiring Diagram of Display Section

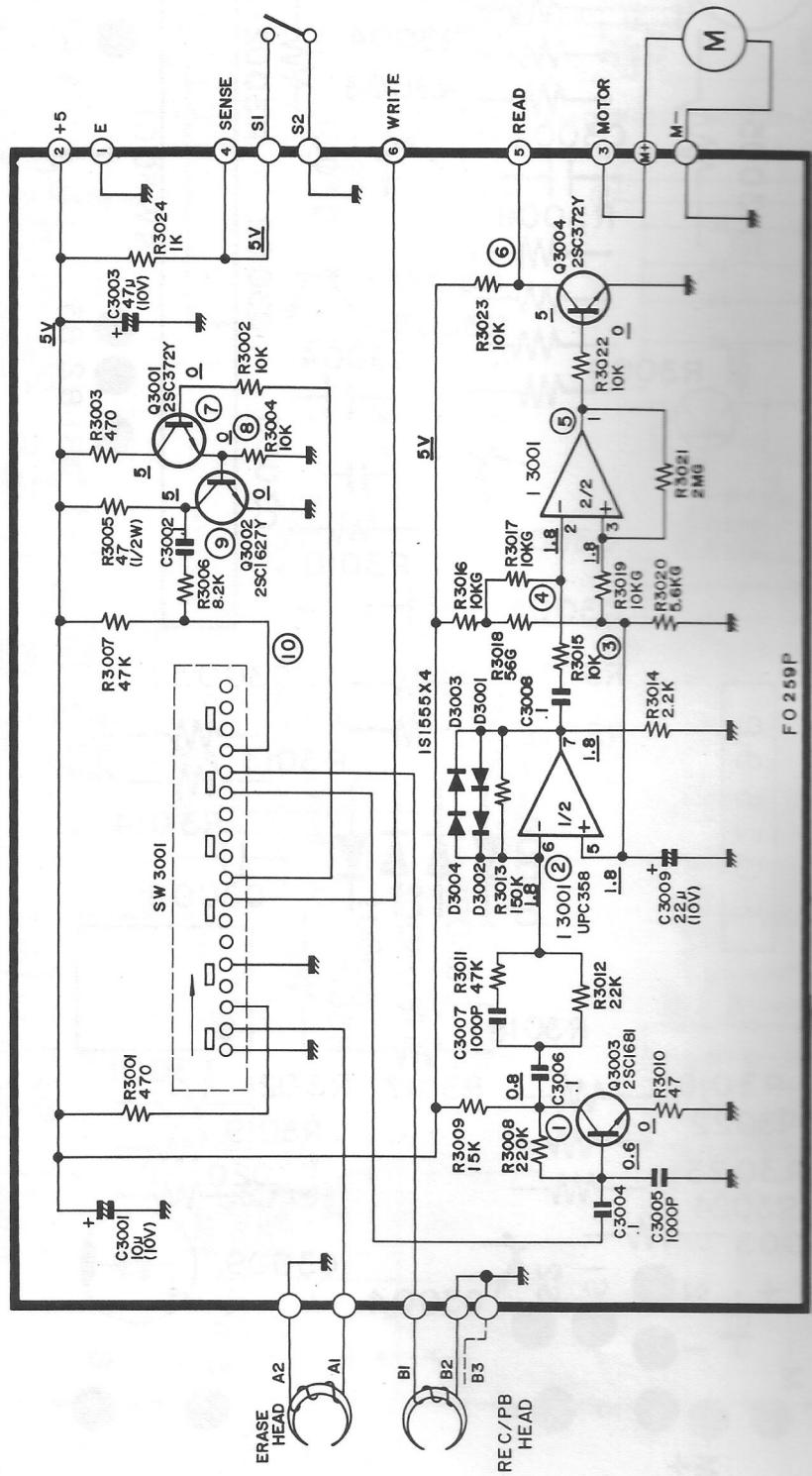


■ Symbols of Cassette Section



■ Wiring Diagram of Cassette Section

MZ - 80K CASSETTE TAPE RECORDER SECTION



KTRC = 0004 PAZZ

FO 259P

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NAME

2. REF. NO.

3. PART NO.

4. DESCRIPTION

MODEL MZ-80K

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE	
*** CPU BOARD UNIT SECTION ***								
	DCPU-0006PAZZ	Assembled CPU Board Unit	**	IC47	RH-IX0045PAZZ	SN74154N	AN	
INTEGRATED CIRCUIT								
IC1	RH-IX0134PAZZ	NE555P	AG	IC51	RH-IX0177PAZZ	SN7425N	AF	
IC13				IC53	RH-IX0148PAZZ	SN74S157Nor HD74S157	AQ	
IC2	RH-IX0079PAZZ	SN74LS74AN or HD74LS74	AG	IC55				
IC12				IC57	RH-IX0147PAZZ	SN74150N	AM	
IC55				CG-ROM	DPROM0001PAZZ	HN462716 or MB8156C	BS	
IC3	RH-IX0038PAZZ	SN7406N	AG	M-ROM	RH-IX0171PAZZ	μPD2332C	BL	
IC4	RH-IX0131PAZZ	SN7414N	AM	RAM	RH-IX0145PAZZ	16KRAM, ITT4116 or	BE	
IC5	RH-IX0136PAZZ	μPD8255C	BA	RAM	RH-IX0121PAZZ	MB8116		
IC6	RH-IX0126PAZZ	SN74LS145N	AL	RAM	RH-IX0121PAZZ	4KRAM, ITT4027 or	AV	
IC7				Q1	VS2SA505Y//1A	MB8227		
IC21	RH-IX0074PAZZ	SN74LS04N or HD74LS04P	AE	Q2			AF	
IC54				Q3				
IC8	RH-IX0040PAZZ	SN74121N	AG	Q4	VS2SC373G//1E	2SC373	AC	
IC31				Q5				
IC9				Q6				
IC14	RH-IX0125PAZZ	SN74LS93	AK	D1	VHD1S1555//1A	1S1555	AA	
IC27				D2				
IC10			TRANSISTORS AND DIODES					
IC15								
IC16	RH-IX0127PAZZ	SN74LS107AN or HD741S107	AG					
IC19								
IC25								
IC11	RH-IX0142PAZZ	SN74S126AN	AH	R1				
IC17	RH-IX0076PAZZ	SN74LS10N or HD74LS10P	AE	R5	VRD-ST2EF221J	220 ohm	AA	
IC18	RH-IX0146PAZZ	μPD8253C	BC	R30				
IC20	RH-IX0075PAZZ	SN74LS08N or HD74LS08P	AE	R32				
IC22				R2	VRD-ST2EE182J	1.8K ohm	AA	
IC24	RH-IX0070PAZZ	SN74LS00N or HD74LS00	AE	R10			AA	
IC58				R3	VRD-ST2EF222J	2.2K ohm	AA	
IC23				R4	VRD-ST2EF561J	560 ohm	AA	
IC52	RH-IX0071PAZZ	SN74LS02N or HD74LS02	AE	R6				
IC26	RH-IX0132PAZZ	SN7486N	AF	R7				
IC28				R8				
IC48	RH-IX0128PAZZ	SN74LS20N or HD74LS20	AE	R11				
IC49				R12				
IC29	RH-IX0129PAZZ	SN74LS165N	AQ	R14				
IC30	RH-IX0104PAZZ	SN74LS42N or HD74LS42	AH	R19	VRD-ST2EF102J	1K ohm	AA	
IC32	RH-IX0130PAZZ	SN74177N	AQ	R22				
IC33				R29				
IC34	RH-IX0133PAZZ	SN74177N	AL	R38				
IC35				R41				
IC44	RH-IX0123PAZZ	SN74LS244N	AS	R44				
IC45				R48				
IC50				R9				
IC36	RH-IX0176PAZZ	SN74LS241N	AS	R26	VRD-ST2EF122J	1.2K ohm	AA	
IC37				R36				
IC38				R13				
IC39	RH-IX0083PAZZ	SN74LS157N or HD74LS157	AH	R27				
IC40				R28				
IC41	RH-IX0122PAZZ	MB8114NC or HM472114P-3	AV	R31	VRD-ST2EF103J	10K ohm	AA	
IC42				R33				
IC43	RH-IX0124PAZZ	SN74LS245N	AR	R35				
IC46	RH-IX0090PAZZ	Z80CPU	BF	R39			AA	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
R20	VRD-ST2EF271J	270 ohm	AA	C36	VCEAAU1EW107Y	100MFD, 25V, Aluminum	AB
R21	VRD-ST2EF822J	8.2K ohm	AA	C37	VCSACU1AE336K	33MFD, 10V, Tantalum	AD
R23	VRD-ST2EF152J	1.5K ohm	AA	C38	VCSACU1VE106M	10MFD, 35V, Tantalum	AE
R24	VRD-ST2EF473J	47K ohm	AA	C39			
R25	VRD-ST2EF123J	12K ohm	AA	C41			
R34 } R40 }	VRD-ST2EF101J	100 ohm	AA	C59			
R37	VRD-ST2EF153J	15K ohm	AA	C61			
R42	VRD-ST2EF332J	3.3K ohm	AA	C63			
R43	VRD-ST2EF331J	330 ohm	AA	C65			
VR	RVR-M0019PAZZ	Variable Resistor 68K ohm	AC	C66			
RA1 } RA2 }	RR-KZ0031PAZZ	Resistor Array 10K ohm x 8	AD	C68			
				C70			
				C72	VCTYPU1ED104Z	0.1MFD, 25V, Ceramic	AB
				C75			
				C77			
				C79			
				C81			
				C82			
				C84			
				C86			
				C88			
CAPACITORS							
C1 } C4 }	VCCCP1H3101J	100PF, Ceramic	AA				
C17 }	VCQYKU1HM332K	0.0033MFD, Film	AA				
C2 }							
C3 }							
C7 }							
C12 }							
C24 }							
C25 }							
C27 }							
C31 }							
C33 }							
C34 }							
C35 }							
C40 }							
C42 }							
C58 }							
C60 }							
C62 }	VCTYPU1BD104Z	0.1MFD, 12V, Ceramic	AB				
C64 }							
C67 }							
C69 }							
C71 }							
C73 }							
C74 }							
C76 }							
C78 }							
C80 }							
C83 }							
C85 }							
C87 }							
C89 }							
C90 }							
C91 }							
C92 }							
C5 }	VCEAAU1CW105Y	1MFD, 16V, Aluminum	AB	I2001	RH-IX0015TAZZ	μ PC1031H, Vertical deflection Circuit	AM
C23 }				I2002	RH-IX0016TAZZ	LA4030P, Power Amp.	AK
C6 }							
C13 }							
C15 }	VCKZPU1HF103P	0.01MFD, Ceramic	AA				
C16 }							
C20 }							
C14 }	VCEAAU1CW106Y	10MFD, 16V, Aluminum	AB				
C18 }	VCEAAU1CW227Y	220MFD, 16V, Aluminum	AC	Q2001	VS2SC1514-1E	2SC1514	AF
C19 }	VCEAAU1CW226Y	22MFD, 16V, Aluminum	AB	Q2002	VS2SA673-C/1E	2SA673	AC
C21 }				Q2003			
C22 }	VCQYKU1HM103K	0.01MFD, Film	AB	Q2004	VS2SC1213-C1A	2SC1213	AC
C26 }	VCEAAU1CW107Y	100MFD, 16V, Aluminum	AB	Q2005	VS2SC681A-R1A	2SC681A-R	AM
C32 }							

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE		
DIODES									
D2001	VHD02Z7R5A//A	7.5V Zener, 02Z75A		R2046	RVR-B7032TAZZ	5K ohm, Variable Resistor for Volume	AD		
D2002			AC	R2047	VRD-ST2EF222J	2.2K ohm, 1/4W	AA		
D2003	VHD1N34A//A	1N-34A	AB	R2048	VRD-ST2EF471J	470 ohm, 1/4W	AA		
D2004				R2049	VRD-ST2EF473J	47K ohm, 1/4W	AA		
D2005	RH-DX0039TAZZ	SI-RECT208	AC	R2051	VRD-ST2EF120J	12 ohm, 1/4W	AA		
D2008									
D2006	RH-DX0043TAZZ	SIR60	AC	CAPACITORS					
D2009			AD	C2001	VCQYKU1HM152K	0.0015MFD, Mylar	AA		
D2007	RH-DX0062CEZZ	RH1		C2002	VCQPSC2DA104K	0.1MFD, 200V, Film	AC		
				C2036					
				C2037					
RESISTORS									
R2001			AA	C2003	VCEAAU2CW106Y	10MFD, 160V, Aluminum	AE		
R2003	VRD-ST2EF470J	47 ohm, 1/4W		C2004	VCEAAU1CW478Y	4700MFD, 16V, Aluminum	AH		
R2004			AD	C2005	VCEAAU1CW108Y	1000MFD, 16V, Aluminum	AD		
R2002	RVR-B0015PAZZ	500 ohm, Variable Resistor for Contrast		C2050					
R2005	VRC-MT2HG102J	1K ohm, 1/2W	AA	C2006	VCQYKU1HM332K	0.0033MFD, Mylar	AA		
R2006	VRD-ST2EF225J	2.2M ohm, 1/4W		C2007					
R2007			AA	C2008	VCEAAU1EW475A	4.7MFD, 25V, Aluminum	AB		
R2050	VRD-ST2EF154J	150K ohm, 1/4W		C2012					
R2008	RVR-B7021TAZZ	250K ohm, Variable Resistor for Brightness	AD	C2009	VCSACU1VE105K	1MFD, 35V, Tantalum	AC		
R2009	VRD-ST2EF472J	4.7K ohm, 1/4W		C2010	VCEAAU1CW226Y	22MFD, 16V, Aluminum	AC		
R2010	VRD-ST2EF473J	47K ohm, 1/4W	AA	C2011	VCQYKU1HM333K	0.033MFD, Mylar	AB		
R2011				C2030					
R2024			AA	C2013	RC-EZ0029TAZZ	22MFD, 16V, Aluminum	AC		
R2027	VRD-ST2EF102J	1K ohm, 1/4W		C2014	VCEABA1CW226M	22MFD, 16V, Aluminum	AC		
R2037			AA	C2015	VCEAAU1AW107Y	100FMD, 10V, Aluminum	AB		
R2012	VRD-ST2EF153J	15K ohm, 1/4W		C2017	RC-EZ0024TAZZ	6.8MFD, 25V, Aluminium	AG		
R2013	VRD-ST2EF123J	12K ohm, 1/4W	AA	C2018	VCQYKU1HM153K	0.015MFD, Mylar	AB		
R2014	VRD-ST2EF272J	2.7K ohm, 1/4W		C2019					
R2015	VRC-MT2HG3R3J	3.3 ohm, 1/2W	AA	C2020	VCQYKU1HM683K	0.068MFD, Mylar	AB		
R2016	VRD-ST2EF273J	27K ohm, 1/4W		C2021	VCEAAU1CW107Y	100MFD, 16V, Aluminum	AB		
R2017	RVR-B7029TAZZ	50K ohm, Variable Resistor for V-Hold	AD	C2022	VCQYKU1HM103K	0.01MFD, Mylar	AB		
R2018	VRD-ST2EF122J	1.2K ohm, 1/4W		C2023	VCQYKU1HM223K	0.022MFD, Mylar	AB		
R2019			AA	C2024	VCQYKU1HM473K	0.047MFD, Mylar	AB		
R2053	VRD-ST2EF103J	10K ohm, 1/4W		C2025	VCEAAU1EW335A	3.3MFD, 25V, Aluminum	AB		
R2020			AA	C2026	VCQYKU1HM123J	0.012MFD, Mylar	AB		
R2021	VRC-MT2HG1R5J	1.5 ohm, 1/2W		C2027	VCQYKU1HM473J	0.047MFD, Mylar	AB		
R2022	RVR-M7052TAZZ	20K ohm, Variable Resistor for V-Size	AC	C2028	VCCSPU1H6101K	100PF, 50V, Ceramic	AA		
R2023				C2032					
R2026	VRD-ST2EF331J	330 ohm, 1/4W	AA	C2039					
R2025	RVR-B7004TAZZ	300 ohm, Variable Resistor for V-Line		C2040					
R2028	VRD-ST2EF821J	820 ohm, 1/4W	AA	C2041	VCKZPR1HF103P	0.01MFD, Ceramic	AA		
R2029				C2042					
R2030	VRD-ST2EF682J	6.8K ohm, 1/4W	AA	C2043					
R2031	VRD-ST2EF822J	8.2K ohm, 1/4W		C2046					
R2032			AA	C2033	VCQPSC2DA683K	0.068MFD, 200V, Film	AB		
R2036	VRD-ST2EF392J	3.9K ohm, 1/4W		C2034	VCQPSC2DA223K	0.022MFD, 200V, Film	AB		
R2033	VRD-ST2EF330J	33 ohm, 1/4W	AA	C2035	VCQPSC2DA153K	0.015MFD, 200V, Film	AB		
R2034				C2038	VCEAAU1HW105A	1MFD, 50V, Aluminum	AB		
R2035	VRD-ST2EF332J	3.3K ohm, 1/4W	AA	C2044	VCQYKU1HM472K	0.0047MFD, Mylar	AA		
R2038	VRD-ST2EF680J	68 ohm, 1/4W		C2045					
R2039	VRS-PU3DB222J	2.2K ohm, 2W	AA	C2047	VCEAAU1CW227Y	220MFD, 16V, Aluminum	AB		
R2040	VRD-ST2EF221J	220 ohm, 1/4W		C2051					
R2041	VRC-MT2HG560J	56 ohm, 1/2W	AA	C2048	VCEAAU2AW227Y	220MFD, 100V, Aluminum	AF		
R2042				C2049	VCEAAU1CW106Y	10MFD, 16V, Aluminum	AB		
R2043	VRC-MT2HG330J	33 ohm, 1/2W	AA	C2052	VCKYPU2HE103P	0.01MFD, 500V, Ceramic	AB		
R2044	RVR-B7022TAZZ	1M ohm, Variable Resistor for Focus	AD	C2053	VCQYKU1HM104K	0.1MFD, Mylar	AB		
R2045	VRD-ST2EF564J	560K ohm, 1/4W							
			AA	TRANSFORMER AND COILS					
				T2001	RTRNT0017TAZZ	H-Drive Transformer	AF		
				T2002	CTRNF2072TA01	High Voltage Transformer	AY		
			AA	1	RCILH4070TAZZ	Refraction Coil	AX		

PARTS LIST

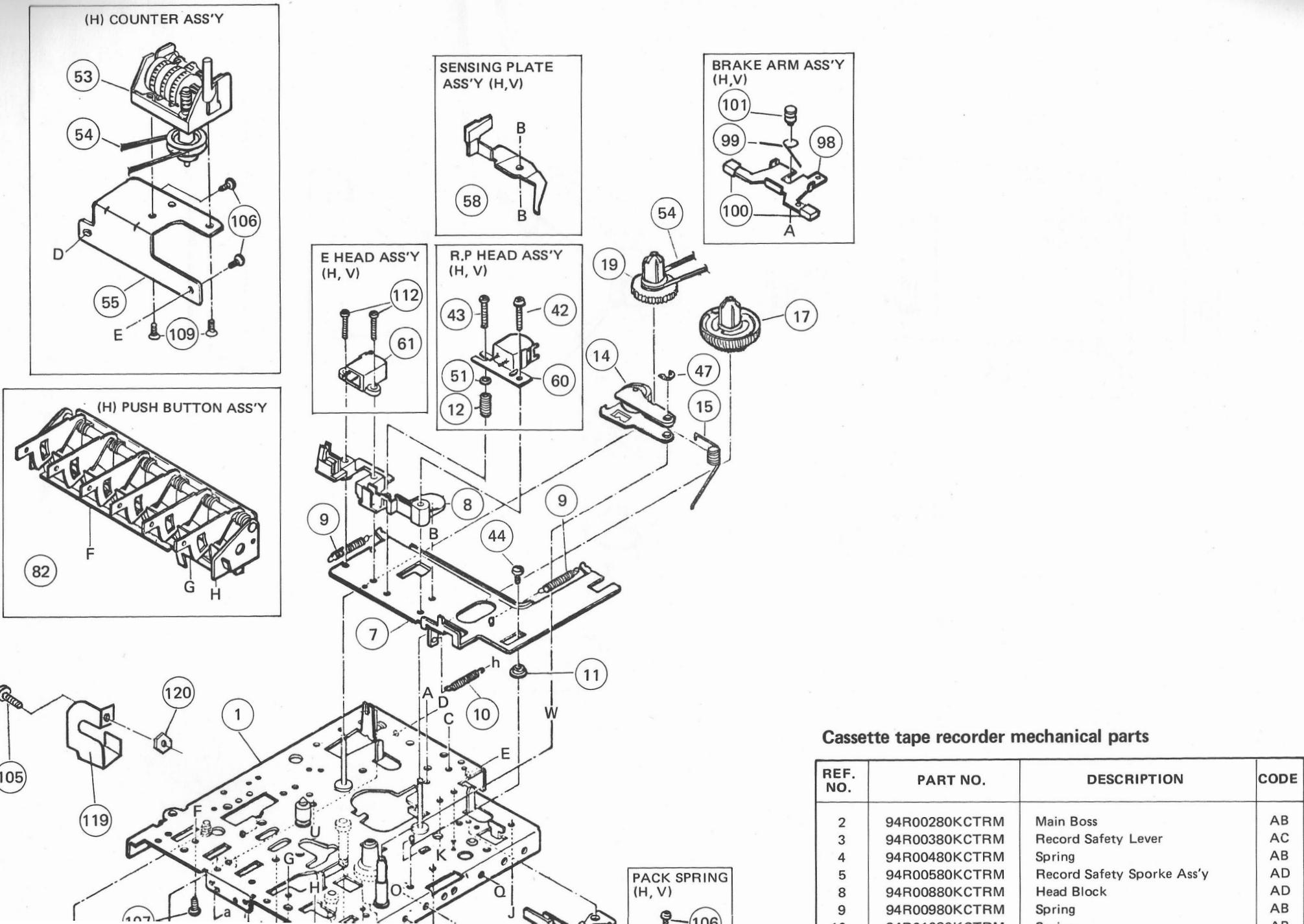
REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE		
L2001	RCILB0021TAZZ	H-Hold Variable Coil	AG	R404	VRW-KT3DDR05K	0.05 ohm, 2W, Cement	AC		
L2002	RCILZ0057TAZZ	H-Lin Coil	AG	R504					
MISCELLANEOUS									
2	QPWBF0261PAZZ	Printed Wiring Board	AM	R405	VRD-ST2EF563J	56K ohm, 1/4W	AA		
	PRDAF0147TAZZ	Radiator	AB	R406					
	PRDAF0107TAZZ	Radiator	AB	R507	VRD-ST2EF472J	4.7K ohm, 1/4W	AA		
	QSOCV0701SEZZ	CRT Socket	AC	R508					
	QPLGN0404CEZZ	4-Pin Plug	AB	R409	VRD-ST2EF153J	15K ohm, 1/4W	AA		
	QSOCN0077PAZZ	Lead Wire with 6-Pin Socket	AH	R410	VRD-ST2EF332J	3.3K ohm, 1/4W	AA		
	QCNW-0009PAZZ	Lead Wire with 2-Pin Socket (to Speaker)	AD	R510	VRD-ST2EF392J	3.9K ohm, 1/4W	AA		
3	GCABC8004PASC	TV Cabinet	BC	VR201					
4	GWAKP0001PASC	Front Frame	AS	VR401	RVR-M0010PAZZ	1K ohm, Variable Resistor	AC		
5	GCOVZ0005PAZZ	Front Panel	AN	VR501					
6	LANGB0002PAZZ	Support Angle A	AE	CAPACITORS					
7	LANGB0003PAZZ	Support Angle B	AF	C101	△ RC-CZ0174PAZZ	0.047MFD, 250V, Mylar	AK		
8	DDAI-0004PAZZ	PWB Mounting Plate	AR	C201	VCEAAU1CM228Y	2200MFD, 16V, Aluminum	AF		
9	PSHEF0007PAZZ	Guard Net for Speaker	AB	C404	VCEAAU1AM477M	470MFD, 10V, Aluminum	AD		
10	LANGQ0005PAZZ	Display PWB Fixing Angle	AB	C202	VCEAAU1AM338Y	3300MFD, 10V, Aluminum	AE		
11	LANGS0003PAZZ	Speaker mounting Plate	AB	C301	VCSACU1VE106M	10MFD, 35V, Tantalum	AG		
12	LANGS0013CEZZ	Speaker Holder	AB	C302	VCEAAU1VM258Y	2500MFD, 35V, Aluminum	AB		
13	△ VB240NB4/K1E	CRT	BM	C403	VCQYKU1HM332K	0.0033MFD, 50V, Film	AA		
14	VSP0080P-16YA	Speaker	AQ	C404	VCQYKU1HM223K	0.022MFD, 50V, Film	AB		
15	PFTA-0001PASC	Back Panel	AH	C405	VCQYKU1HM183K	0.018MFD, 50V, Film	AB		
	HINDP0005PASA	Indicator Panel of Control Knob	AE	C506	VCSACU1VE106M	10MFD, 35V, Tantalum	AC		
16	MSPRT0011PAZZ	Spring	AB	C507	VCQYKU1HM102K	0.001MFD, 50V, Film	AA		
				C508	VCKYPU1NB104Z	0.1MFD, 12V, Ceramic	AF		
				C406	VCEAAU1AM338Y	3300MFD, 10V, Aluminum	AB		
POWER SUPPLY UNIT SECTION									
	DBOXD0004PAZZ	Assembled Power Supply Unit	**	COILS AND TRANSFORMER					
	DOBXD0005PAZZ	Assembled Power Supply Unit (for UK)	**	L201	RTRNZ0010PAZZ	Filter Coil	AH		
INTEGRATED CIRCUIT				L401	RTRNZ0007PAZZ	Choke Coil	AP		
IC1	RH-IX0178PAZZ	Regulator, μ A78MGU	AR	L502	RTRNZ0009PAZZ	Filter Coil	AL		
IC2			AT	L402	T101	△ RTRNP0018PAZZ	Power Supply Transformer 220V	BF	
IC3	△ RH-IX0151PAZZ	Switching Regulator, SG3524	AT	L501	T101	△ RTRNP0019PAZZ	Power Supply Transformer 240V (for UK)	BF	
TRANSISTORS				L503					
Q401			AN	MISCELLANEOUS					
Q501	VS2SA764///-1	2SA764	AC	F101	△ QPWB0260PAZZ	Printed Wiring Board	AM		
Q402				F201	△ QFS-C0002PAZZ	Fuse, T500mA	AD		
Q502	VS2SA673-C/1E	2SA673		F202	△ QFS-C0001PAZZ	Fuse, T315mA	AD		
DIODES				F401	△ QFS-C0003PAZZ	Fuse, T1.6A	AD		
D201	VHDRU2////-1	RU2	AA	F501					
D301	VHDSS5R////-1	SS-5R		RESISTORS					
D302	VHDSS5////-1	SS-5	AA	QFSHC0001PAZZ	Fuse Holder	AD			
D401				QFSHA0001PAZZ	Fuse Holder	AA			
D402	VHDUF3////-1	UF3	AA	17	△ QSOCA0001PAZZ	A.C. Socket	AD		
D501				18	△ QSW-C0003PAZZ	A.C. Switch	AQ		
D502				17	△ QSOCA0002PAZZ	A.C. Socket (for UK)	AG		
RESISTORS									
R201	VRD-ST2EF123J	12K ohm, 1/4W	AA						
R401			AA						
R501	VRD-ST2EF101J	100 ohm, 1/4W							
R402									
R403									
R406									
R502	VRD-ST2EF272J	2.7K ohm, 1/4W							
R503									
R506									

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE		
19	GCABA8018PASA	Cabinet	AK	C3001	VCEAAU1AW476Y	47MFD, 10V, Aluminum	AB		
20	GCABB8018PASA	Cabinet	AT	C3002					
	GCABB8019PASA	Cabinet (for UK)	AQ	C3004	VCQYKU1HM104K	0.1MFD, Mylar	AB		
21	PRDAR0010PAZZ	Radiator	AF	C3006					
	DSOCN0016PAZZ	Lead Wire with 4-pin Socket	AB	C3008					
22	LBSHC0003PAZZ	Rubber Bush	AB	C3003	VCEAAU1AW106Y	10MFD, 10V, Aluminum	AB		
23	▲ PSPAY0001PAZZ	Insulating Sheet	AF	C3005	VCQYKU1HM102K	1000PF, Mylar	AA		
				C3007					
				C3009	VCEAAU1AW226Y	22 MFD, 10V, Aluminum	AB		
CAPACITORS									
MISCELLANEOUS									
* * * CASSETTE TAPE RECORDER SECTION * * *									
	KTRC-0004PAZZ	Assembled Cassette Tape Recorder Unit	BT	QPWBF0259PAZZ	Printed Wiring Board	AF			
INTEGRATED CIRCUIT									
I3001	RH-IX0150PAZZ	OP Amp. μ PC358C	AK	SW3001	QSW-S0011VAZZ	Slide Switch (2 contacts), Cassette Tape Recorder	AG		
				24	KMECA0001PAZZ	Machinical Unit (Refer to other table for detailed parts)	BG		
TRANSISTORS									
Q3001	VS2SC372-Y/1E	2SC372Y	AC	25	GCABE8004PASA	Cabinet	AP		
Q3004				26	JKNBR0002PASA	Button	AC		
Q3002	VS2SC1627-Y-A	2SC1627Y	AD	27	GFTAC0001PASA	Flap	AN		
Q3003	VS2SC1681/-1	2SC1681	AD	28	HINDM0006PASA	Indicator Plate of Function Buttons	AG		
DIODES									
D3001			AA	29	HDECB0010PASA	Plate	AC		
D3002	VHD1S1555//1A	1S1555	AA	30	MSPRP0089AGFW	Crossarm Brace	AB		
D3003			AA	31	MSPRB0029PAFJ	Spring	AA		
D3004			AA	32	QSOCN0078PAZZ	Lead Wire with 6-Pin Socket	AH		
RESISTORS									
R3001	VRD-ST2EF471J	470 ohm, 1/4W	AA	* * * KEY BOARD UNIT SECTION * * *					
R3003			AA	DKEY-0005PAZZ	Assembled Key Board Unit	BX			
R3002			AA	MISCELLANEOUS					
R3004			AA	33	QPWBF0167PAZZ	Printed Wiring Board	AN		
R3015	VRD-ST2EF103J	10K ohm, 1/4W	AA	34	LANGQ0003PAZZ	Mechanical Key-Mounting Plate	AN		
R3022			AA	35	QSW-K0001PAZZ	Mechanical Key Switch	AD		
R3023			AA	36	QSW-K0009PAZZ	Key Top (small)	AB		
R3005	VRC-MT2HG470J	47 ohm, 1/2W	AA	37	QSW-K0010PAZZ	Key Cover (small)	AB		
R3006	VRD-ST2EF822J	8.2K ohm, 1/4W	AA	38	QSW-K0011PAZZ	Key Top (double size)	AC		
R3007			AA	39	QSW-K0012PAZZ	Key Cover (double size)	AC		
R3011	VRD-ST2EF473J	47K ohm, 1/4W	AA	40	QSOCN0079PAZZ	Lead Wire with 18-pin Socket	AM		
R3008	VRD-ST2EF224J	220K ohm, 1/4W	AA	41	HINDP0009PASA	Key Seal	AK		
R3009	VRD-ST2EF153J	15K ohm, 1/4W	AA	MISCELLANEOUS					
R3010	VRD-ST2EF470J	47 ohm, 1/4W	AA	DIODES					
R3012	VRD-ST2EF223J	22K ohm, 1/4W	AA	OTHER SECTION					
R3013	VRD-ST2EF154J	150K ohm, 1/4W	AA	DIODES					
R3014	VRD-ST2EF222J	2.2K ohm, 1/4W	AA	OTHER SECTION					
R3016			AA	DIODES					
R3017	VRD-ST2EF103G	10K ohm, 1/4W	AA	OTHER SECTION					
R3019			AA	DIODES					
R3018	VRD-ST2EF560G	56 ohm, 1/4W	AA	OTHER SECTION					
R3020	VRD-ST2EF562G	5.6K ohm, 1/4W	AA	DIODES					
R3021	VRD-ST2EF205G	2M ohm, 1/4W	AA	OTHER SECTION					
R3024	VRD-ST2EF102J	1K ohm, 1/4W	AA	42	RH-PX0031PAZZ	LED, GL-53RG	AF		

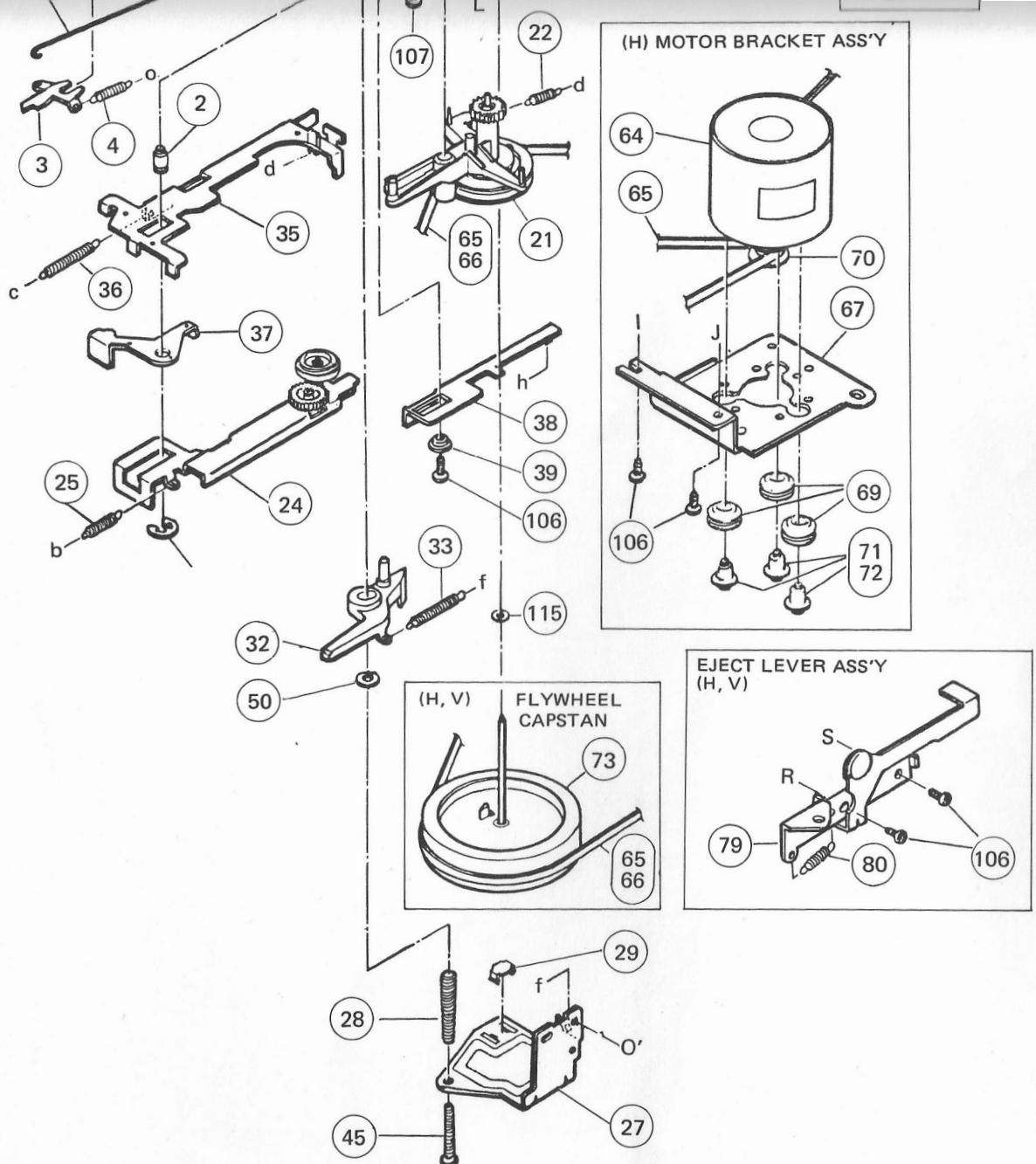
PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE		
MISCELLANEOUS									
43	QPWBF0172PAZZ	Printed Wiring Board for LED	AB	53	LHLDW9003CEZZ	Cord Fixer, HW-146	AA		
44	QSOCN0080PAZZ	Lead Wire with 3-Pin Socket	AE		TINSG0002PAZZ	Instruction Manual (Germany)	BG		
45	DCABA8042PASA	Cabinet	BL		TINSE0001PAZZ	Instruction Manual (English)			
46	GCABB8017PASA	Cabinet	BD		TINSF0001PAZZ	Instruction Manual (French)			
47	DANG-0006PAZZ	Arm Fixing Angle with Screw	AE	54	HINDP0010PASA	Key Seal (letters with unlaut)	AD		
48	LHLDF0011PAZZ	CPU Board Holder	AB	55	HINDM0007PASA	Decoration Panel	AK		
49	GLEGR0001PAZZ	LEG	AB		PCOVP0015PAZZ	Cover	AG		
50	MHNG-0001PAFC	Hinge	AQ	(Note) Be sure to use genuine parts for securing the safety and reliability of the set.					
51	MARMM0019PAFC	Support Arm	AQ	Parts marked with "▲" and parts shaded (in black) are especially important for maintaining the safety and protecting ability of the set.					
	QACCK0050AFZZ	A.C. Cord	AQ						
	QACCB0001PAZZ	A.C. Cord (for UK)	AQ						
52	LBNDC0001PAZZ	Cord Keeper	AC	Be sure to replace them parts of specified part number.					



Cassette tape recorder mechanical parts

REF. NO.	PART NO.	DESCRIPTION	CODE
2	94R00280KCTRM	Main Boss	AB
3	94R00380KCTRM	Record Safety Lever	AC
4	94R00480KCTRM	Spring	AB
5	94R00580KCTRM	Record Safety Sporke Ass'y	AD
8	94R00880KCTRM	Head Block	AD
9	94R00980KCTRM	Spring	AB
	94R01080KCTRM	Spring	AB



	Take-up Reel Ass'y	CODE
17	Supply Reel Ass'y	AA
19	RF Clutch Ass'y	BG
21	Spring	AN
22	F.F. Idler Arm Ass'y	AB
24	Spring	AL
25	Flywheel Holder	AB
27	Thrust Spring	AF
28	Flywheel Bearing	AB
29	Auto-Stop Lever	AA
32	Spring	AD
33	Main Plate	AB
35	Spring	AF
36	Rewind Arm	AB
37	Play Slide Lever	AC
38	Collar	AC
39	Leaf Switch	AA
40	Counter	AM
53	Counter Belt	AF
54	Sensing Plate Ass'y	AF
58	R/P Head	AM
60	Erase Head	AG
61	Pack Spring	AD
62	Motor	AV
64	Main Belt	AH
65	Motor Rubber	AA
69	Motor Pulley	AD
70	Collar Screw(s)	AB
72	Flywheel Capstan	AP
73	Eject Lever Ass'y	AK
79	Spring	AB
80	Push Button Ass'y	AW
82	Brake Arm	AD
98	Spring	AB
99	Brake Shoe	AB
100	Brake Arm Shaft	AB
101	Nylon Washer 2.2 x 7 x 0.5	AA
115	REC Push Plate	AC
119		

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of the set.

(Germany)
(English)
(French)
(Italian)

CODE
AA
BG
AD
AK
AG

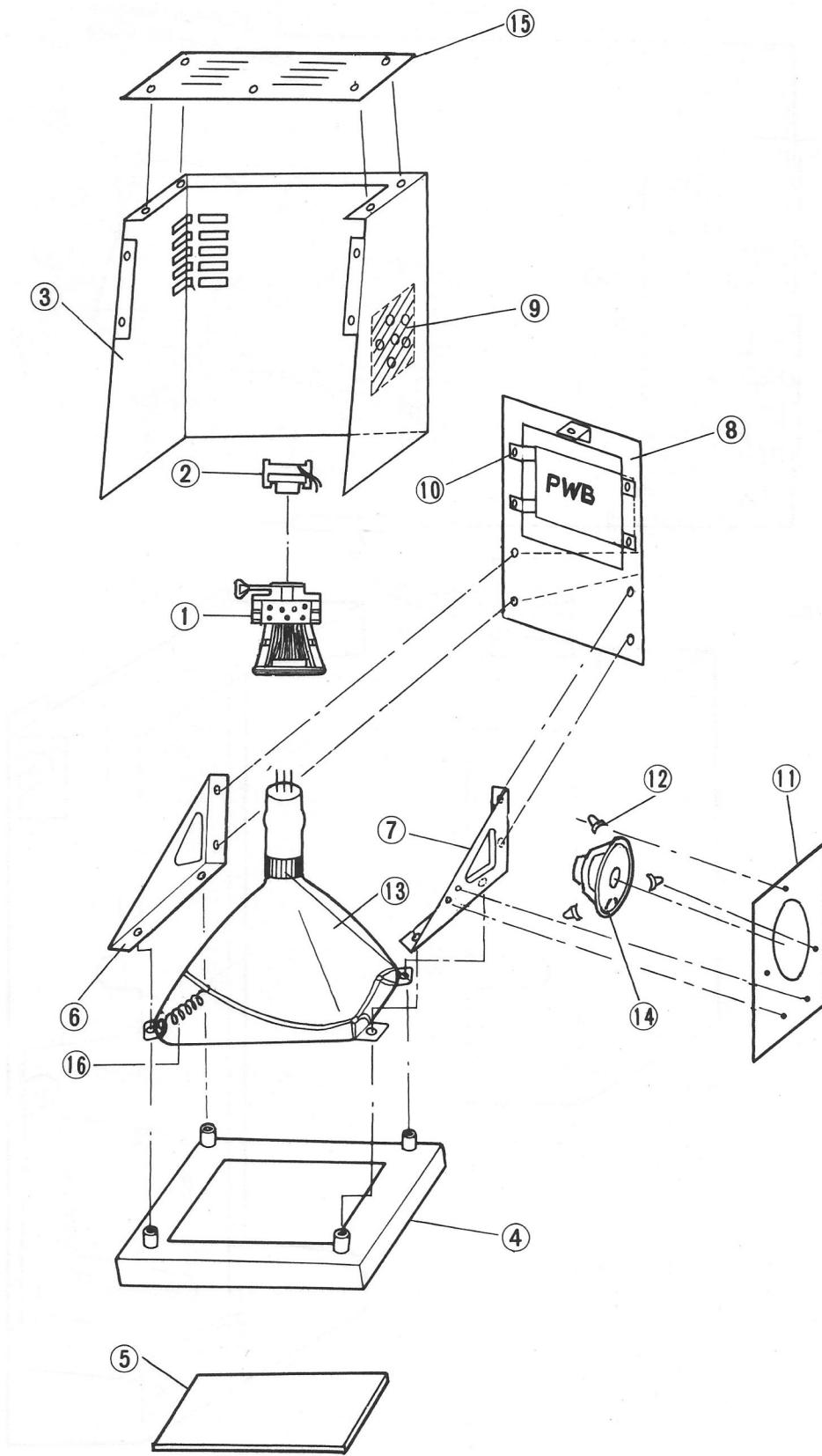


Fig. Display Section

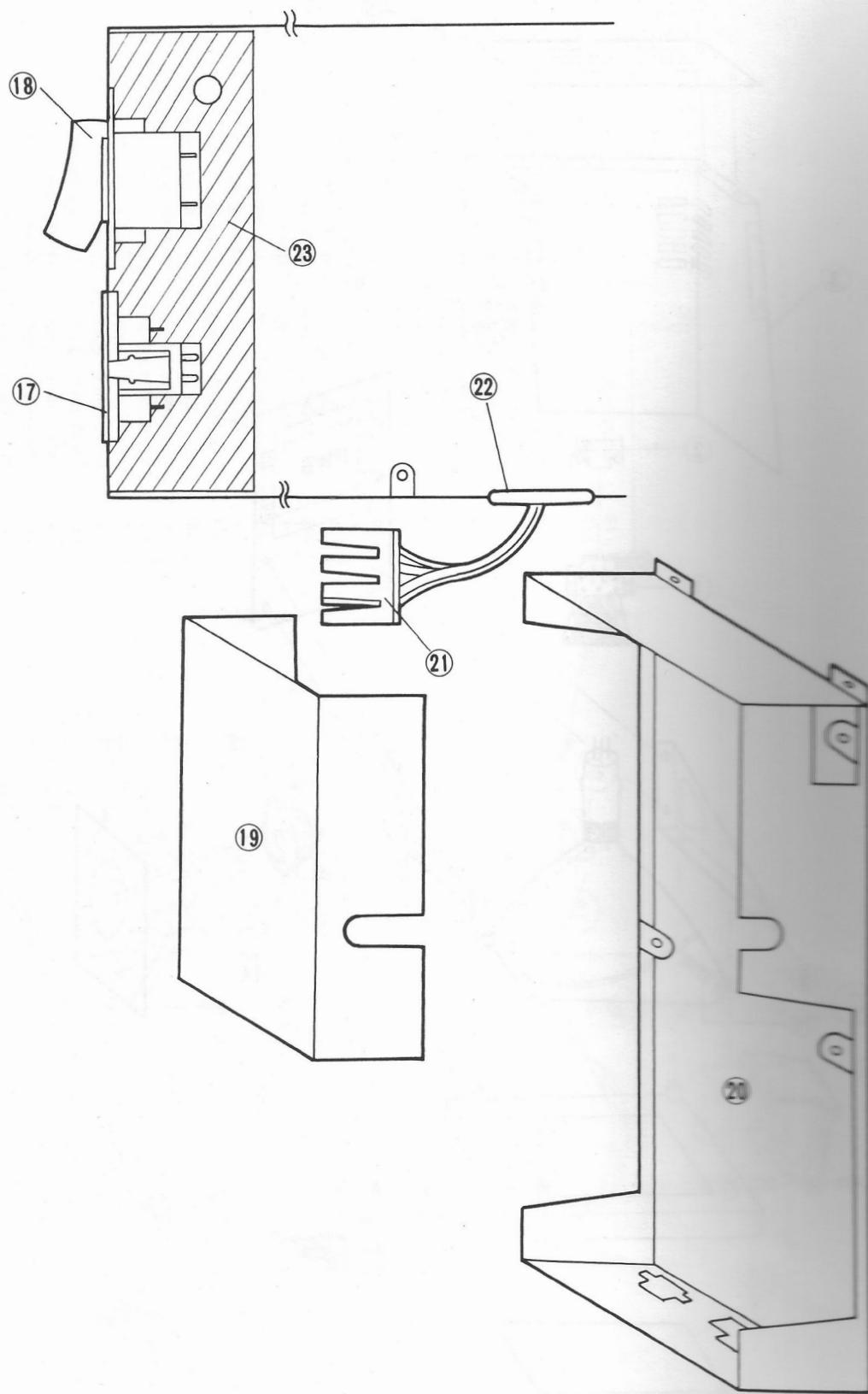


Fig. Power Supply Section

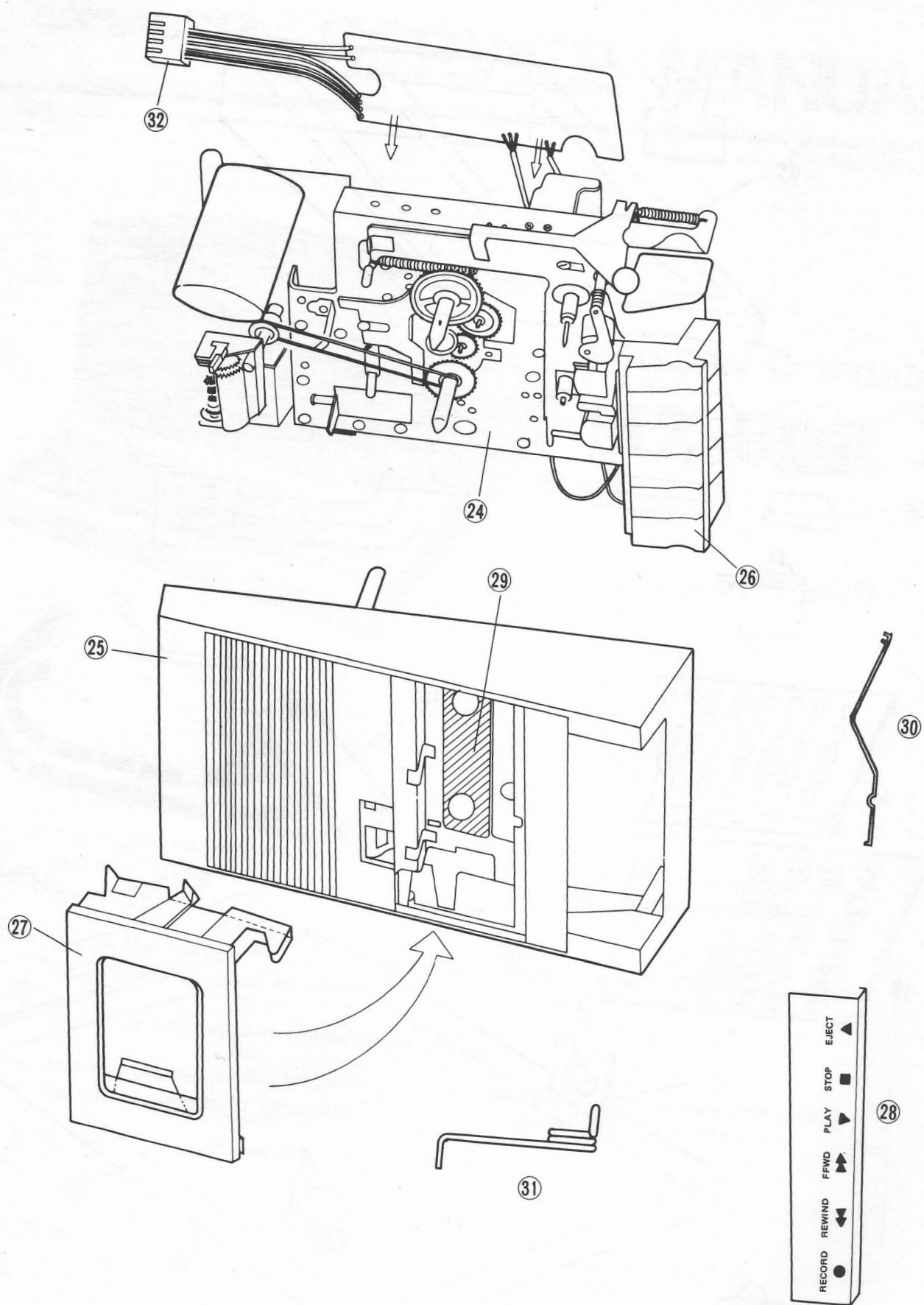


Fig. Cassette Tape Recorder Section

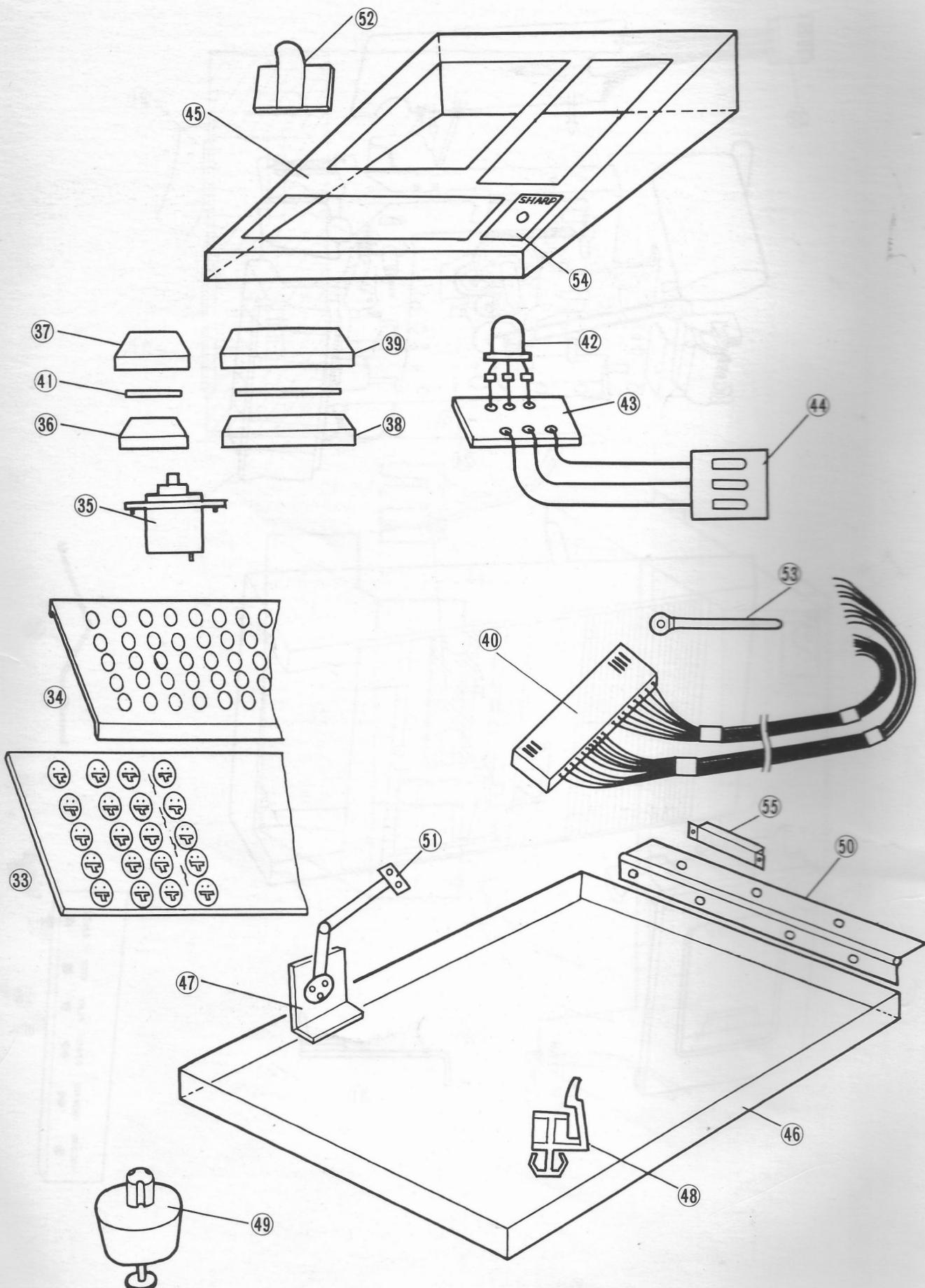


Fig. Key Board Section and Others

D810404 HO
Printed in Japan